

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UNIFIED PATENTS LLC,
Petitioner,

v.

MOBILEPAY LLC,
Patent Owner.

IPR2019-00466
Patent 9,800,706 B2

Before THU A. DANG, JENNIFER S. BISK, and NEIL T. POWELL,
Administrative Patent Judges.

DANG, *Administrative Patent Judge.*

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
Denying Patent Owner's Motion to Exclude (Paper 25)

35 U.S.C. § 318(a)

I. INTRODUCTION

A. Background

In response to a Petition (Paper 2, “Pet.”) filed by Unified Patents LLC (“Petitioner”), we instituted *inter partes* review of claims 1–4 (“the challenged claims”) of U.S. Patent No. 9,800,706 B2 (Ex. 1001, “the ’706 patent”). Paper 10. During trial, MobilePay LLC (“Patent Owner”) filed a Response. Paper 16 (“PO. Resp.”), to which Petitioner filed a Reply (Paper 20, “Pet. Reply”). In turn, Patent Owner filed a Sur-reply. Paper 23 (“PO Sur-reply”). Patent Owner then filed a Motion to Exclude New Arguments (Paper 25, “PO Exclude Mot.”), and in response, Petitioner filed an Opposition to the Motion to Exclude (Paper 27, “Pet. Mot. Opp.”).¹ An oral hearing was held with the parties on May 4, 2020. A transcript of the hearing has been entered into the record. Paper 35 (“Tr.”).

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 claims 1–4 on which we instituted trial. Based on the record before us, Petitioner has shown, by a preponderance of the evidence, that claims 1–4 of the ’706 patent are unpatentable.

¹ In an April 29, 2020, call with the parties, we informed the parties that we would not issue an Order addressing the Motion to Exclude prior to oral hearing, we would not entertain arguments on this issue during oral hearing, and we would address the issue thereafter. Accordingly, we will address the Motion to Exclude in this Final Written Decision. *See* Section II(A) below.

B. Related Matters

According to Petitioner, the '706 patent is the subject of *MobilePay LLC v. Bank of America Merchant Services, LLC*, No. 6:18- cv-00321 (W.D. Tex.); *MobilePay LLC v. Intuit Inc.*, No. 2:18-cv-00414 (E.D. Tex.); *MobilePay LLC v. Bank of America, N.A.*, No. 2:18-cv-00413 (E.D. Tex.); *MobilePay LLC v. Mindbody, Inc.*, No. 6:18-cv-00286 (W.D. Tex.); and *MobilePay LLC v. PayPal, Inc.*, No. 6:18-cv-00287 (W.D. Tex.). Pet. 1–2; Paper 4, 2.

C. The '706 Patent (Ex. 1001)

The '706 patent issued on October 24, 2017, from an application filed March 8, 2010. Ex. 1001, codes (45), (22). The '706 patent claims priority to US Provisional Patent Application No. 61/158,586 (“the Provisional Application”) filed on March 9, 2009. *Id.* at code (60).

The '706 patent relates to a system for “coupling a peripheral to a device such as a smart phone.” *Id.*, Abstract. Smartphone type devices communicate to the Internet using the TCP/IP protocol, while hardware transmission standards that support this include “Wi-Fi (802.11); cellular wireless networking such as CDMA, UMTS, HSDPA, GPRS and EDGE; and wide-area networking such as WiMAX (IEEE 802.16).” *Id.* at 1:63–2:3. The '706 patent states, “[h]owever, device-to-device and device-to-peripheral communication is awkward with these standards.” *Id.* at 2:3–8. “To have two devices communicate in this manner, they must either communicate through an intermediary server or website,” thus, “adding delay and complexity of set up.” *Id.*

According to the '706 patent, “[t]he teachings provided herein could be used in a variety of ways.” *Id.* at 11:59–60. For example:

A ‘cloud service’ could decode the signals. That is, the phone could be relatively “dumb,” and a device could be used to communicate to the ‘cloud’ through a mobile phone. A software vendor could implement a solution, whereby users transmit data from an accessory, through the audio input of their phone. The data would then be uploaded without significant change to a server, where it would be decoded. *Id.* at 12:15–22.

D. The Provisional Application (Ex. 1004)

The Provisional Application relates to an apparatus “for connecting peripherals to devices and for enabling unidirectional and bi-directional communication between portable devices.” Ex. 1004, Abstract. Similar to the ’706 patent, the Provisional Application also discloses devices communicating to the Internet using the TCP/IP protocol while hardware transmission standards that support this include CDMA, HSDPA, GPRS, and the like. *Compare* Ex. 1001, 1:63–2:3, *with* Ex. 1004 ¶ 6. Like the ’706 patent, the Provisional Application indicates that device-to-device and device-to-peripheral communication is “awkward” with these standards. Ex.1004 ¶ 6. Accordingly, the Provisional Application attempts to overcome the shortcomings of the prior art by providing unidirectional and bi-directional communication between mobile devices that can be implemented by any mobile application developer. *Id.* ¶¶ 15–16.

The Provisional Application indicates that the invention applies to any device with audio input capability, for example, smart phones such as the Apple iPhone™ (*id.* ¶ 98), wherein smart phones incorporate “general purpose computing technology” coupled with an “always-on” Internet connection. *Id.* ¶ 3.

One embodiment of the Provisional Application relates to a mobile device that receives textual or binary data “by decoding modulated information from ambient audio in the environment.” *Id.* ¶ 37. For example, “at a club, concert, speech, or presentation, a subtitle track corresponding to the presented media could be embedded in the audio,” and the mobile device running the appropriate application “would listen to and decode the modulated data embedded in the ambient audio.” *Id.*

Another embodiment of the Provisional Application relates to multiple mobile devices that receive textual or binary data “by decoding modulated information from ambient audio in the environment containing URLs, codes, digital signatures, encryption payloads, or time-based or location-based information.” *Id.* ¶ 38. The devices acquire the information by listening for “packets” of data in which the devices are interested. *Id.* The packets of data can, for example, include URLs, and the URLs can be used to automatically register the device for a mailing list or automatically access a website to download credentials or licenses. *Id.*

Another embodiment of the Provisional Application relates to a system of two devices to be used in a “museum environment.” *Id.* ¶ 39. The two devices communicate with each other via audio transmitted from one of the devices and received by the other device. *Id.* The transmitting device conveys a URL corresponding to content for a presentation in the museum, and the receiving device accesses the presentation via the Internet at the URL. *Id.*

Another embodiment of the Provisional Application relates to a system of two devices that directly communicate with each other. *Id.* ¶ 41. The two devices communicate “by positioning the speaker of a first said device near the

microphone of a second said device to exchange small notes or a larger data transaction to take place,” which is then “consummated on another high-bandwidth link such as 3G, WiFi, WiMax or others.” *Id.* The data transaction takes place by transmission of a URL from the first device to the second by audio communication, and subsequently, the second device accesses the data from an Internet-based server. *Id.*

For example, when the operator of a first device wishes to select a group of photographs to beam to a newly encountered user of a second device, the first device uploads the photographs to an Internet-based server and then sends sounds to the second device to inform the second device of the URL to retrieve the photos. *Id.*

E. Illustrative Claim

Of the challenged claims, claim 1 is independent. Claims 2–4 depend from claim 1. Claim 1 is illustrative:

1. A system for coupling a credit card reader to a mobile device, the system comprising:
 - a hardware component that connects to the mobile device and the credit card reader, the hardware component including:
 - a first mechanism configured to receive data provided by the credit card reader;
 - a communication controller for buffering the data received from the credit card reader prior to conversion by a first circuit;
 - the first circuit configured to convert the data to an analog audio signal;
 - a connector to couple the hardware component to an audio input port of the mobile device, wherein: the connector bridges a microphone pin of the audio input port such that

the mobile device detects a presence of the connector in the audio input port; and

the connector provides an audio communication between the hardware component and the mobile device and communicates the analog audio signal from the hardware component to the mobile device;

a second mechanism on the mobile device configured to receive the analog audio signal and convert the analog audio signal into binary data; and

a third mechanism on the mobile device configured to upload the binary data to a cloud service for decoding.

Ex. 1001, 12:42–13:2.

F. Evidence of Record

Petitioner relies upon the references listed below (Pet. 23–70).

Reference		Exhibit
Tang et al. ("Tang")	WO 2010/097711 A2, published September 2, 2010	1005
Kinzalow et al. ("Kinzalow")	US Patent No. 6,052,603, issued April 18, 2000	1006
Inoue	US Patent No. 7,058,842 B2, issued June 6, 2006	1007
Cheon et al. ("Cheon")	US 8,265,553 B2, issued September 11, 2012	1008

Petitioner also relies on the Declarations of Peter Alexander, Ph.D. Exs. 1002, 1012. Dr. Alexander was cross-examined by Patent Owner, and a transcript of his deposition was entered into record. Ex. 2008. Patent Owner relies on the Declarations of Dean Sirovica, Ph.D. Exs. 2001, 2007.

G. Asserted Grounds of Unpatentability

We instituted *inter partes* review on all grounds in the Petition on all challenged claims. Petitioner asserts the following grounds of unpatentability (Pet. 5):

Claims	Basis	References
1, 4	§ 103 ²	Tang, Kinzalow, Inoue
2, 3 ³	§ 103	Tang, Kinzalow, Inoue, Cheon

II. ANALYSIS

A. Motion to Exclude (Paper 25)

Patent Owner moves to exclude “new arguments submitted by Petitioner [in Petitioner’s Reply].” PO Excl. Mot. 1. In particular, Patent Owner contends that, in its Reply, Petitioner submits new arguments that “w[ere] never suggested in the Petition.” *Id.* at 1–3. According to Patent Owner, “Petitioner now presents a new theory based on new allegations not presented

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103, effective March 16, 2013. Because the application from which the ’706 patent issued was filed before this date, the pre-AIA version of § 103 applies.

³ Although Petitioner initially sought to include claims 19, 21, 22, and 25 in its challenge, Patent Owner statutorily disclaimed those claims after the Petition was filed. *See* Ex. 2002. For the reasons discussed in this Decision, we do not regard disclaimed claims 19, 21, 22, and 25 as claims challenged in the Petition, and instead regard claims 1–4 as the only challenged claims.

in the Petition,” wherein, “advancing these new arguments now is improper and should be excluded from consideration when evaluating the actual grounds for review as presented in the Petition.” *Id.* at 3.

In its Opposition to Patent Owner’s Motion to Exclude, Petitioner argues that the Motion to Exclude “is in clear violation of the rules” because “[a] motion to exclude is intended to challenge the admissibility of *evidence*,” wherein the moving party is required to “(1) object during a deposition, file objections within ten business days of the institution decision, or file objects within five business days of service of the evidence,” and “(2) preserve the objection by filing a motion to exclude that both identifies the objection and explain the objection.” Pet. Mot. Opp. 1–2 (citing 37 C.F.R. § 42.64(a), (b)(1)), (2), (c); Consolidated Trial Practice Guide (“TPG”), 79–80) (emphasis in original). According to Petitioner, “any *arguments* the Motion attempts to have stricken at pages 1 and 5-11 are not the proper subject of a motion to exclude *evidence*,” and “it is unclear what evidence MobilePay is attempting to exclude in its Motion at pages 3 and 11-15.” *Id.* (citing 37 C.F.R. § 42.64(c) (emphasis in original). In particular, according to Petitioner, the only citations to evidence are: pages of Tang, the primary reference, but “there was never any objection to Tang filed within ten days of the institution decision;” and excerpts from the deposition of Petitioner’s witness, but “there is no objection in the deposition record on which to base a motion.” *Id.* at 3 (citing 37 C.F.R. § 42.64(b)(1)), (c)).

In weighing the evidence before us, we find more persuasive the position of Petitioner.

A party wishing to challenge the admissibility of evidence must file any objections within five business days of service of evidence to which the objection is directed, or ten days after institution of trial. 37 C.F.R. §§ 42.64(a), 42.64(b)(1). Further, as set forth in the Trial Practice Guide (TPG) Update (2018), a motion to exclude evidence should:

- (a) Identify where in the record the objection originally was made;
- (b) Identify where in the record the evidence sought to be excluded was relied upon by an opponent;
- (c) Address objections to exhibits in numerical order; and
- (d) Explain the basis and grounds for each objection.

See TPG Update, 16.

A motion to exclude “must explain why the evidence is not admissible (e.g., relevance or hearsay).” *Id.* Further, a motion to exclude should not “address arguments or evidence that a party believes exceeds the proper scope of reply or sur-reply.”⁴ *Id.*

In the Motion to Exclude, Patent Owner merely contends that Petitioner’s *new argument* “of using an unknown and undisclosed buffer instead of Inoue’s buffer” is “a new ground and not alleged in the Petition” (PO Excl. Mot. 5–11), and “that Tang’s transaction server individual credit card data” (*id.* at 11) should not be considered. That is, in its Motion, Patent

⁴ As made clear in the TPG, the proper route to challenge allegedly new or untimely argument is in a motion to strike. TPG Update 17 (explaining that “[i]f a party believes that a brief . . . raises new issues, is accompanied by belatedly presented evidence, or otherwise exceeds the proper scope of reply or sur-reply, it may request authorization to file a motion to strike”). Here, Patent Owner never sought authorization to file a motion to strike.

Owner does not identify in the record any objection made, let alone explain why the objection is made (for example, explain why the evidence is not admissible). *See* TPG Update, 16. Further, as Petitioner points out, the Motion does not “challenge the admissibility of *evidence*,” but rather requests the striking of *arguments* submitted. *See* Pet. Mot. Opp. 1–3.

Accordingly, we agree with Petitioner that the Motion is improper for failing to identify any evidence to exclude, wherein no objection to the evidence was properly made within five business days of service or ten days after institution of trial. Pet. Mot. Opp. 1–3; *see* TPG Update, 16. In particular, we agree with Petitioner that, although the Motion points to several pages of the primary reference to Tang cited, “there was never any objection to Tang filed within ten days of the institution decision,” and although the Motion points to excerpts from the deposition of Petitioner’s witness, “there is no objection in the deposition record on which to base a motion.” Pet. Mot. Opp. 3.

On this record, we DENY Patent Owner’s Motion to Exclude as improper for failing to identify any evidence to exclude with reference to a proper objection as set forth in 37 C.F.R. § 42.64(b)(1)), (c).

B. Level of Ordinary Skill in the Art

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citation omitted). Citing its declarant, Dr. Alexander, Petitioner contends that a person

with ordinary skill in the art at the time of the invention would have held a Bachelor's degree in computer science, electrical engineering, or a similar discipline, and one or two years of work experience in operating systems or networked computing device communication and power consumption of networked computing devices, or a related area. Pet. 17 (citing Ex. 1002 ¶ 15). Patent Owner does not dispute Dr. Alexander's assessment on the level of ordinary skill in the art. *See generally* PO Resp. We adopt the level of ordinary skill as articulated by Petitioner because, based on the record, this proposal appears to be consistent with the '706 patent, the asserted prior art, and is supported by the testimony of Dr. Alexander.

C. Claim Construction

The instant Petition was filed December 31, 2018. Thus, the new rules amending the claim construction standard apply here because the Petition was filed after the November 13, 2018, effective date of the amendment. *See* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340, 51,358 (Oct. 11, 2018) (amending 37 C.F.R. § 42.100(b) effective November 13, 2018) (now codified at 37 C.F.R. § 42.100(b) (2019)). Accordingly, for this *inter partes* review, the Board applies the same claim construction standard as that applied in federal courts.

Under this standard, claim terms “are generally given their ordinary and customary meaning” as understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of

record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). Extrinsic evidence is “less significant than the intrinsic record in determining ‘the legally operative meaning of claim language.’” *Phillips*, 415 F.3d at 1317.

Only terms that are in controversy need to be construed, and then only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999); *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

Petitioner contends that “third mechanism on the mobile device configured to upload the binary data to a cloud service for decoding” appearing in claim 1 should be construed to mean “hardware (*e.g.*, a transceiver) that is configured (*e.g.*, by mobile phone operating system or other software) to upload binary data to a cloud service for decoding.” Pet. 21–22. Petitioner asserts that “[t]he ’706 patent goes on to explain the action that a ‘software vendor’ could implement a device to communicate to the cloud through a mobile phone, after which the ‘data would then be uploaded without significant change to a server, where it would be decoded.’” *Id.* at 21, (citing Ex. 1001, 12:15–22). According to Petitioner, the ’706 patent “identifies the destination: a “‘cloud service’ could decode the signals.” *Id.*

Patent Owner merely asserts that the “plain and ordinary meaning of ‘cloud service’” as understood by a person of ordinary skill in the art is “a collection of functionality and/or services that are provided by remote devices and software, and is interacted with via a network, such as the Internet.” PO

Resp. 9–12 (citing Ex. 2001 ¶¶ 31–34).

The Specification of the '706 patent does not specifically define the term “third mechanism” or even “cloud service.” *See generally* Ex. 1001, Spec., Figs. The nearest support in the Specification indicates that:

A ‘cloud service’ could decode the signals. That is, the phone could be relatively “dumb,” and a device could be used to communicate to the ‘cloud’ through a mobile phone. A software vendor could implement a solution, whereby users transmit data from an accessory, through the audio input of their phone. The data would then be uploaded without significant change to a server, where it would be decoded.
Id. at 12:15–22.

We agree with Patent Owner that “cloud service” should be given its “plain and ordinary meaning” as understood by a person of ordinary skill in the art. PO Resp. 9–12. We are not persuaded that anything in the claims or the Specification, including the language quoted above, defines or limits the “third mechanism” to include “hardware (*e.g.*, a transceiver) that is configured (*e.g.*, by mobile phone operating system or other software) to upload binary data to a cloud service for decoding,” as Petitioner contends. Pet. 22. Rather, we conclude the “ordinary and customary meaning” of the “third mechanism . . . configured to upload the binary data to a cloud service for decoding” as recited in claim 1 is a mechanism that is capable of uploading the binary data to a

cloud service for decoding, wherein a “cloud service” is a service that is capable of decoding the uploaded binary data. Ex. 1001, Claim 1.

D. Whether the '706 Patent can claim the Filing Date of the Provisional Application as its Priority Date

Petitioner asserts that the priority date for the '706 patent cannot be earlier than its actual filing date. Pet. 9. In particular, Petitioner contends that the Provisional Application does not support “a [third] mechanism on the mobile device configured to upload the binary data *to a cloud service for decoding*” as set forth in the claims of the '706 patent. Pet. 9–10 (emphasis added by Petitioner). Petitioner contends that, instead, the Provisional Application discloses only peripheral-to-device and device-to-device communication and fails to disclose client-to-cloud communication. *Id.*

Patent Owner contends that the Provisional Application fully supports the invention defined by claim 1. PO Resp. 14–25. According to Patent Owner, the Provisional Application supports claim 1 at least with respect to a digital camera embodiment, wherein a mobile device uploads the binary data of digital photographs to an “Internet-based server [that] decodes the data,” the data including encoded TCP/IP packets incoming from the mobile device. *Id.* at 16 (citing Ex. 2001 ¶ 38). Thus, Patent Owner argues that the challenged claims are entitled to the priority benefit of the Provisional Application’s March 9, 2009, filing date, and therefore, Tang is not available as prior art.” *Id.* at 25.

1. Principles of Law Regarding Claims of Priority to Provisional Applications

Claims in a patent are entitled to the benefit of a prior filed provisional application under 35 U.S.C. § 119(e) if the provisional application supports the claims in the way required by 35 U.S.C. § 112(a) or 35 U.S.C. § 112 ¶ 1. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). “In other words, the specification of the *provisional* must ‘contain a written description of the invention and the manner and process of making and using it, in such full, clear, concise, and exact terms,’ 35 U.S.C. § 112 ¶ 1, to enable an ordinarily skilled artisan to practice the invention *claimed* in the *non-provisional* application.” *Id.* (citing *New Railhead Mfg., L.L.C. v. Vermeer Mfg. Co.*, 298 F.3d 1290, 1294 (Fed. Cir. 2002) with emphasis from *New Railhead*). Although the written description requirement does not require the applicant “to describe exactly the subject matter claimed” (*In re Gosteli*, 872 F.2d 1008, 1012 (Fed. Cir. 1989)), the application “must describe the later claimed invention ‘in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the claimed invention as of the filing date sought.’” *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1331 (Fed. Cir. 2008), citing *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997).

2. Whether the Provisional Application Provides Support for the Claim Term “Third Mechanism . . . configured to upload the binary data to a cloud service for decoding”

Petitioner contends that the Provisional Application does not support “a [third] mechanism on the mobile device configured to upload the binary data to

a cloud service for decoding.” Pet. 10 (emphasis added by Petitioner). In particular, Petitioner highlights, “nowhere in the ’586 Provisional Application did the applicant disclose *a cloud service for decoding binary data* and [a] mechanism on a mobile device configured to upload such data to the cloud service.” Pet. 11 (citing Ex. 1002 ¶ 38) (emphasis added). Indeed, the Provisional Application fails entirely to mention a cloud service for any decoding function. *See generally*, Ex. 1004.

However, Patent Owner contends that one embodiment of the Provisional Application supports the contested limitation, wherein, in the embodiment, the mobile device uploads the binary data to a domain name server (DNS), the DNS provides the cloud service of decoding domain names to identify number-based Internet addresses, and this address is then used for connecting the mobile device and the Internet-based server. PO Resp. 17–18 (citing Ex. 1004 ¶ 6; Ex. 2001 ¶ 40). Further, Patent Owner contends that the Provisional Application discloses support for a smartphone, such as an iPhone, with “an ‘always-on Internet connection’” uploading “encoded data (e.g., data encoded in TCP/IP packets) to an Internet server (e.g. cloud service),” where “the TCIP/IP packets are decoded upon reception.” *Id.* at 18–22 (citing Ex. 1004 ¶¶ 3, 4, 6, 52, 61, 88, 98; Ex. 1002 ¶¶ 63, 123, 127; Ex. 2001 ¶¶ 43, 45, 46).

In weighing the evidence before us, we find more persuasive the position of Petitioner.

We agree with Petitioner that the Provisional Application is lacking in support for “a [third] mechanism on the mobile device configured to upload the binary data to a cloud service for decoding” as claimed. Pet. 11. In

particular, although the sections of the Provisional Application referenced by Patent Owner disclose mobile devices such as iPhones for communicating to the Internet using TCP/IP protocol (Ex. 1004 ¶¶ 3, 4, 6, 52, 61, 88, 98), we do not find any disclosure in the Provisional Application of a step of uploading “encoded data (e.g., data encoded in TCP/IP packets) to an Internet server (e.g. cloud service),” where “the TCIP/IP packets are decoded upon reception.” PO Resp. 18–22. In particular, we do not find any disclosure of any decoding in the referenced portions of the Provisional Application, let alone of encoded data in TCP/IP packets. *Id.*

We also do not find any disclosure of a mobile device that uploads the binary data to a DNS that provides the cloud service of decoding domain names to identify number-based Internet addresses. PO Resp. 17–18. In particular, we do not find any DNS, let alone one that decodes domain names to identify number-based Internet addresses used for connecting the mobile device and the Internet-based server. *Id.*

As Petitioner points out, “cloud service” is only mentioned in one section of the Specification, the section being “added to the specification [of the ’706 patent] when it was filed on May 8, 2010,” not when the Provisional Application was filed. Tr. 7–8. A comparison of the Provisional Application and the ’706 patent shows that Patent Owner added significant portions of text to support the new claims at the time of filing the ’706 patent. *Compare* Provisional Application (Ex. 1004), *with* the ’706 patent (Ex. 1001). For example, the ’706 patent includes the following newly added text:

A ‘cloud service’ could decode the signals. That is, the phone could be relatively “dumb,” and a device could be used to

communicate to the ‘cloud’ through a mobile phone. A software vendor could implement a solution, whereby users transmit data from an accessory, through the audio input of their phone. The data would then be uploaded without significant change to a server, where it would be decoded.

Ex. 1001, 12:15–22.

During oral arguments, Patent Owner contends that the Provisional Application discloses an embodiment in which a user uploads multiple photographs at one time to an Internet-based server, and the Internet-based server in turn receives those photographs, stores the photographs, generates a URL (“uniform resource locator”), and then provides the URL back down to the user. Tr. 21. Thus, the user is then able to send to another user the URL, and the other user uses that URL to access the photos from the Internet-based server. *Id.* Patent Owner contends that, in this embodiment, the uplink from the user’s phone to the Internet-based server would use traditional communication links such as WiFi, 3G, etc., built into the iPhone, and the packets are then decoded from WiFi and 3G, wherein, since multiple photographs are sent at one time, there is a need to “separately parse [the photographs] out and stick them in some kind of a data file and then generate the URL link.” *Id.* at 22, 24–25.

Patent Owner explains that this embodiment of the Provisional Application is similar to Tang, the primary reference in the Petition, in that “the internal data is going to have to be rearranged in some form to be handed off and then processed later.” Tr. 28. That is, the network “is necessarily going to have to parse those photographs from the entire stream of data packets that it receives” so that it can process and send the data packet to the other

user's device when received. According to Patent Owner, Tang is similar in that "multiple data fields of a credit card . . . are read" and then "would be parsed out by the transaction server." *Id.* at 28–29.

However, as Petitioner points out in response, in the paragraphs cited by Patent Owner for support for the above assertions, "there is little support for anything that [Patent Owner] said about the parsing of the photos that's going to happen on the server." Tr. 39. In particular, we agree with Petitioner that "[i]t's unclear what exactly of the binary data of the photos is actually going to actually be decoded at the server," because "there's no indication that the phone is then just being used as a transmission unit," wherein it could be "the phone that actually parses those photos to present the photos." *Id.* In fact, in various exemplary embodiments set forth in the Provisional Application, it is the phone and not the server that is indicated as being provided for "decoding modulated information from ambient audio in the environment." *See* Ex. 1004 ¶¶ 37–38. Thus, we are persuaded by Petitioner's contention that, in this scenario, "it's very possible that the photos could have been uploaded as a string of binary data," "[t]he URL then accesses that string of binary data," and "then the phone downloads that binary data." Tr. 37.

Although we are persuaded by Patent Owner's contention that the described Internet-based server can be a "cloud service" (Tr. 21), we are persuaded by Petitioner's contention that the paragraphs referenced by Patent Owner only describe explicitly "a cloud service for receiving, storing and delivery of photos," wherein we do not find any description of "the idea of the cloud service of decoding the binary data," as claimed. Tr. 39. We agree with Petitioner that "[m]ere storage of binary data is not sufficient for these claims,"

and that receiving data via the Internet, such as general packet radio services (“GPRS”) data, even if Tang also receives GPRS data, “is not sufficient for decoding.” *Id.*

We are also persuaded by Petitioner’s contention that “decoding” being asserted by Petitioner, is “not just receiving packets of internet data and reassembling binary data,” *i.e.*, not “just mere packetization/ depacketization.” Tr. 41. Petitioner’s expert, Dr. Alexander, was cross-examined by Patent Owner on this subject, and he testified in his deposition that, with GPRS, data is transferred in series of smaller packets and reassembled at the destination, but that is “not decoding the data, [but] just taking the segments of data and reassembling them into one block.” Ex. 2008, 39:12–40:2; *see also id.* at 44:7–19 (“Reassembly in my understanding would not be considered decoding to extract credit card information such as name and account number”).

In contrast to the Provisional Application, Tang discloses a transaction server that decodes to recover the transaction card data and the payment details, wherein the transaction data is reformatted and sent to a remote processor/issuer, which then either approves or rejects the transaction. *See* Ex. 1005 ¶ 98. That is, Tang is decoding the data to recover data, not just mere depacketization of data. *Id.*

Based on the evidence of record, we do not agree with Patent Owner’s contention that the Provisional Application’s cited network “is necessarily going to have to parse those photographs from the entire stream of data packets that it receives” so that it can process and send the data packet to the other user’s device when received. *See generally* PO Resp 28. Instead, Petitioner persuades us that the evidence shows that the Provisional Application fails to

provide written description support for the “third mechanism on the mobile device configured to upload the binary data to a cloud service for decoding.”

Accordingly, the Provisional Application does not support a priority date prior to March 8, 2010, for claim 1. Therefore, based on the totality of the circumstances, on this record, we determine that Petitioner has shown that the ’706 patent is not entitled to the priority benefit of the filing date of the Provisional Application. Thus, we conclude that Tang, with an effective date of February 10, 2010, as conceded by Patent Owner, is prior art under §102(e). PO Resp. 25.

E. Obviousness over Tang, Kinzalow, and Inoue.

Petitioner asserts that claims 1 and 4 are unpatentable under § 103 as obvious over Tang, Kinzalow, and Inoue; and that claims 2 and 3 are unpatentable under § 103 as obvious over Tang, Kinzalow, Inoue, and Cheon. Pet. 5. To support its contentions, Petitioner cites to the Declarations of Dr. Alexander. Exs. 1002, 1012. Patent Owner counters that Tang is not prior art (PO Resp. 25–26) and that the prior art combination does not teach or suggest certain claim limitations. PO Resp. 27–66, 73–84. Patent Owner also contends that there is no motivation to combine the references. *Id.* at 67–73. Patent Owner cites to the Declarations of Dr. Sirovica. Exs. 2001, 2007. Patent Owner also cross-examined Dr. Alexander. Ex. 2008.

For the reasons provided below, we determine that Petitioner has demonstrated that claims 1 and 4 would have been obvious over Tang, Kinzalow, and Inoue; and that claims 2 and 3 are obvious over Tang, Kinzalow, Inoue, and Cheon. We provide a brief summary of Tang, Kinzalow,

Inoue, and Cheon, before turning to the relevant contentions advanced by the parties.

Tang (Ex. 1005)

Tang is titled, “Apparatus and Method for Commercial Transactions Using a Communication Device,” and was published on September 2, 2010, with an international filing date of February 10, 2010. Ex. 1005, codes (54), (43), (22). Tang relates to an apparatus for commercial transactions using a transaction card via a communication device in audio communication with a remote processor assembly. *Id.*, Abstract. In particular, Tang discloses an input device that captures card information from the transaction card, and a controller that converts the inputted information to an audio signal. *Id.* The information is then transmitted to a transaction server via a communication device to be converted to an appropriate signal, which in turn is transmitted to a remote processor/issuer for validation of the transaction. *Id.*

In one embodiment, Tang discloses a portable point of sale (POS) device linked to the communication device, thereby providing a transaction and communication assembly. *Id.* ¶ 72. The POS device includes an input device to capture information from the transaction card, such as a credit card reader, and a controller to process and convert the captured information to an audio format suitable for transmission over an analog voice channel. *Id.* ¶¶ 72–74. The communication device comprises a wireless communication device, a mobile phone, a cellular phone, a landline phone, a smart phone, or the like. *Id.* ¶ 71. A remote transaction processing server receives information from the communication device to validate a commercial transaction, and either approves or rejects the transaction. *Id.* ¶ 77.

Figure 1 further illustrates several of Tang's key teachings and is reproduced below.

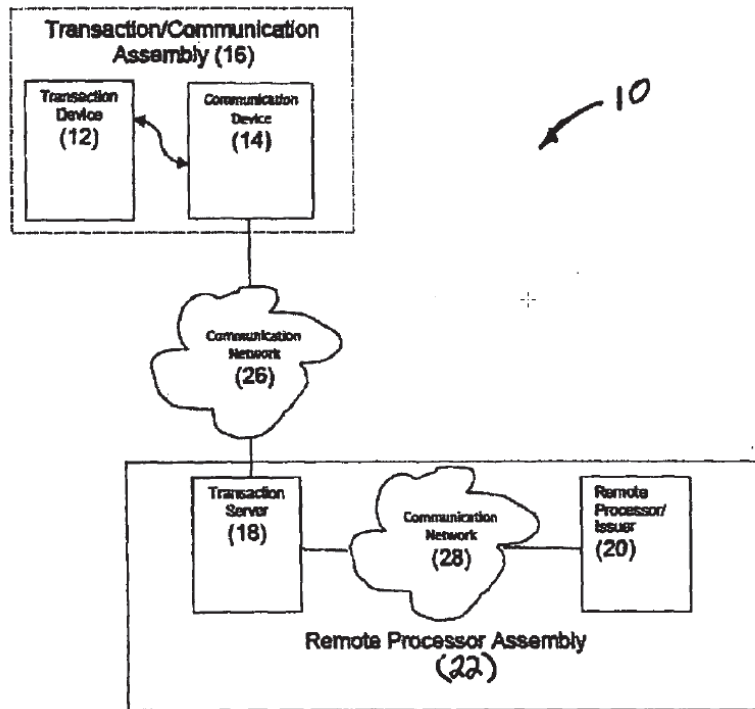


Fig. 1

Figure 1 shows transaction network 10, including transaction device 12 and communication device 14, which together form transaction and communication assembly 16. *Id.* ¶ 79. Figure 1 also shows communication network 26 (e.g. Internet, GSM/GPRS network), and transaction server 18 and transaction processor/issuer 20, which together form remote processor assembly 22. *Id.*

As shown in Figure 1, a request for a transaction from a transaction card occurs at transaction device 12, which captures information from the transaction card and converts this information into an audio signal, the audio signal is transmitted to communication device 14 for transmission to

transaction server 18 via communication network 26, transaction server 18 converts the audio signal into a digital signal to transmit to remote processor/issuer 20, and remote processor/issuer 20 then validates this request by accepting or denying the request. *Id.* ¶ 79. In an example, transaction server 18 receives data from communication device 14, decodes the data to recover the transaction card data and the payment details, and the transaction data is reformatted and sent to remote processor/issuer 20 which either approves or rejects the transaction. *Id.* ¶ 98.

Figure 2 illustrating an embodiment of Tang's transaction and communication assembly is reproduced below.

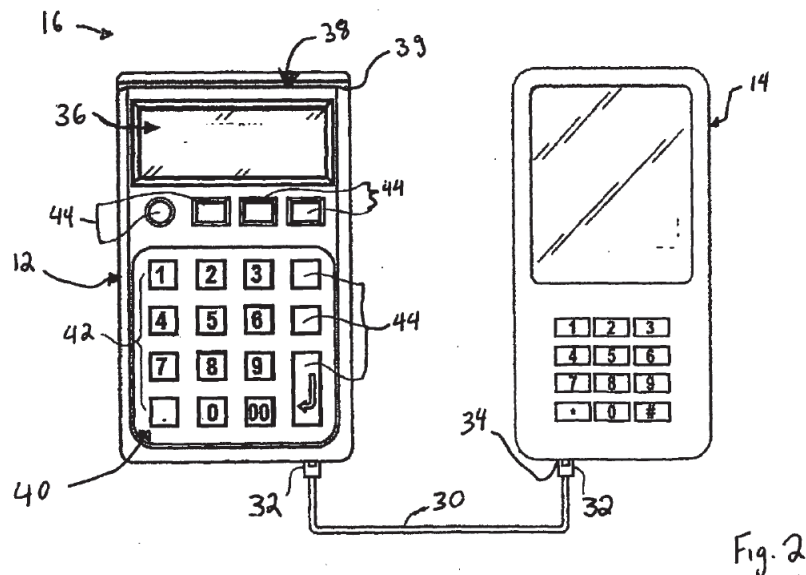


Figure 2 shows transaction and communication assembly 16 in a first exemplary embodiment. *Id.* ¶ 80. As shown in Figure 2, transaction device 12 in the form of a POS device is linked by cable 30 to communication device 14 in the form of a mobile phone. *Id.* Transaction device 12 also includes input

device 38 such as card reader slot 39 for swiping and inserting a transaction card and capturing information therefrom, wherein transaction device 12 captures the information and converts the information into an audio signal for transmission to communication device 14. *Id.* ¶ 81.

Figure 5 illustrating a control system of an embodiment of Tang's transaction device is reproduced below.

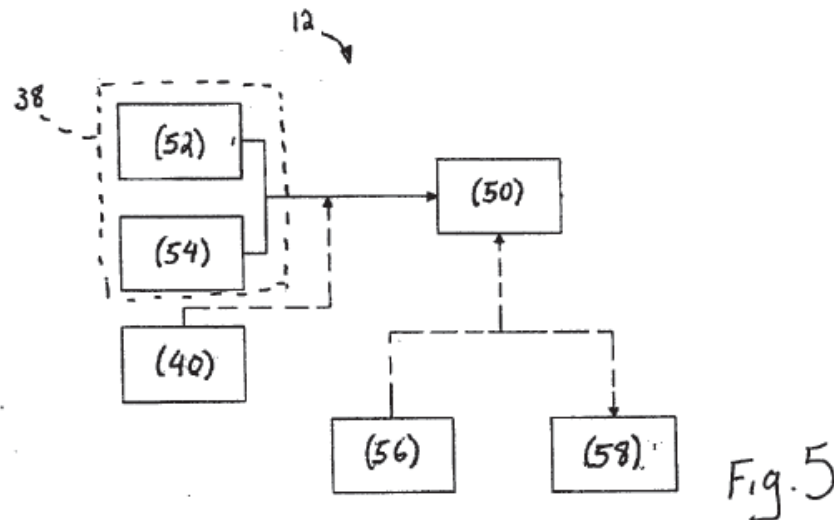


Figure 5 shows the control system of transaction device 12 of the first embodiment. *Id.* ¶ 67. As shown in Figure 5, transaction device 12 includes controller 50, which can be in the form of a microcontroller (MCU), and input device 38, which can be in the form of analog reader 52 such as a magnetic stripe reader and/or digital signal reader 54 such as an Integrated Circuit (IC) or Smart Card. *Id.* ¶ 83. As shown in Figure 5, the input system of transaction apparatus 12 can also include an additional input device in the form of control pad 40. *Id.* Controller 50 converts information captured by input device 38 (or additional input device 40) into an analog audio signal suitable for

transmission over an analog communication link between transaction device 12 and communication device 14. *Id.* ¶ 86.

As shown in Figures 2 and 5, in this first embodiment, to execute a commercial transaction, the user swipes a transaction card through slot 39, wherein the analog information on the magnetic stripe of the card is captured by magnetic stripe reader 52 and transferred to controller 50 (“MCU 50”), or alternatively, the digital information from the IC chip of the card is captured by digital signal reader 54 and is transferred to controller 50. *Id.* ¶ 85.

Transaction server 18 receives information from communication device 12 over communication network 26. *Id.* ¶ 87. The information received by transaction server 18 is decrypted into a digital signal and the information is utilized to validate a commercial transaction. *Id.*

Figure 7 illustrating another embodiment of Tang’s transaction and communication assembly is reproduced below.

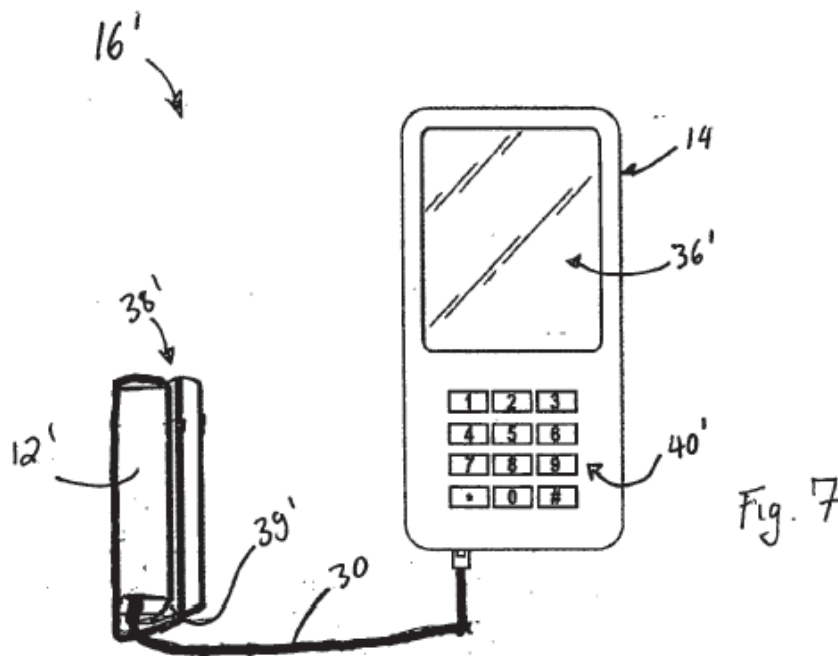


Figure 7 shows transaction and communication assembly 16' in a second exemplary embodiment. *Id.* ¶ 69. As shown in Figure 7, transaction and communication assembly 16' includes communication device 14 in the form of a mobile phone linked via cable 30 to transaction device 12'. *Id.* ¶ 100. Transaction device 12' includes input device 38' in the form of slot 39' for capturing information from a transaction card and sending this information without conversion directly to mobile phone 14 via cable 30. *Id.* Additional input device is provided by mobile phone 14 in the form of control pad 40'. *Id.*

Figure 8 illustrating a control system of another embodiment Tang's transaction device is reproduced below.

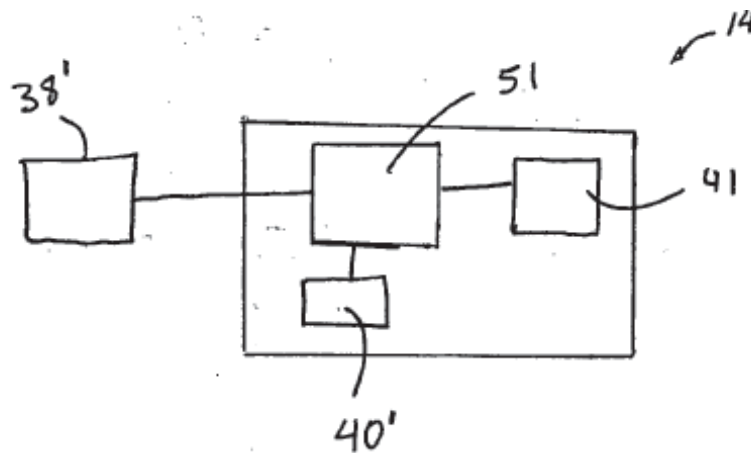


Figure 8 shows the control system of communication device 14 of transaction and communication assembly 16' of the second embodiment shown in Figure 7. *Id.* ¶ 70. As shown in Figure 8, controller 51 of communication device (mobile phone) 14 is the controller of transaction and communication assembly 16'. *Id.* ¶ 100. Software application of controller 51 is installed to

convert between audio and digital signal and to receive and transmit audio data to and from hands-free interface 41. *Id.*

In this second embodiment, to send money, for example, the user plugs transaction device 12' into communication device 14 and selects "send money" via control pad 40'. *Id.* ¶ 101. Following instructions on communication device 14, the user swipes the transaction card against card reader slot 39' on transaction device 12'. *Id.* The analog signal from the magnetic transaction card is sent via hands-free interface 41, where the software application of controller 51 converts the received signal back to binary data as stored on the transaction card. *Id.* Optionally, the user has to enter a personal identification number (PIN) for authentication as in the case of a debit card transaction through the software application. *Id.*

In this second embodiment, as explained with respect to transaction network 10 of Figure 1, after the user has confirmed the transaction, a call is made to transaction server 18, wherein the transaction card data along with the transaction data are encoded and sent to transaction server 18 in the form of general-packet radio-service (GPRS) data. *Id.* ¶ 102. Transaction server 18 decodes the transaction data, reformats and sends this data to processor/issuer 20 for approval, and this validation information data is then returned to transaction server 18, which in turn sends the validation data back to communication device 14 in audio format. *Id.*

Kinzalow (Ex. 1006)

Kinzalow is titled, "System for Interfacing a Communication Device with a Radio for Hands-Free Operation," and issued on April 18, 2000, with a filing date of September 18, 1997. Ex. 1006, codes (54), (45), (22). Kinzalow

relates to interfacing a portable cellular phone with an automobile radio. *Id.*, Abstract. The interface converts phone signals from audio frequencies to radio frequencies so that the radio receiver can receive the signal. *Id.* The signal is then reproduced over the radio's speakers. *Id.*

In particular, Kinzalow discloses an embodiment wherein the interface is connected to an interface socket of a phone. *Id.* at 5:15–21. Once connected, all audio signals are directed through the interface, and the phone speaker and microphone are disabled. *Id.*

Inoue (Ex. 1007)

Inoue is titled, “Microcontroller with Multiple Function Blocks and Clock Signal Control,” and issued on June 6, 2006, with a filing date of January 27, 2003. Ex. 1007, codes (54), (45), (22). Inoue relates to a microcontroller comprising input and output ports. *Id.*, Abstract.

Figure 1 is representative of the Inoue embodiment and reproduced below.

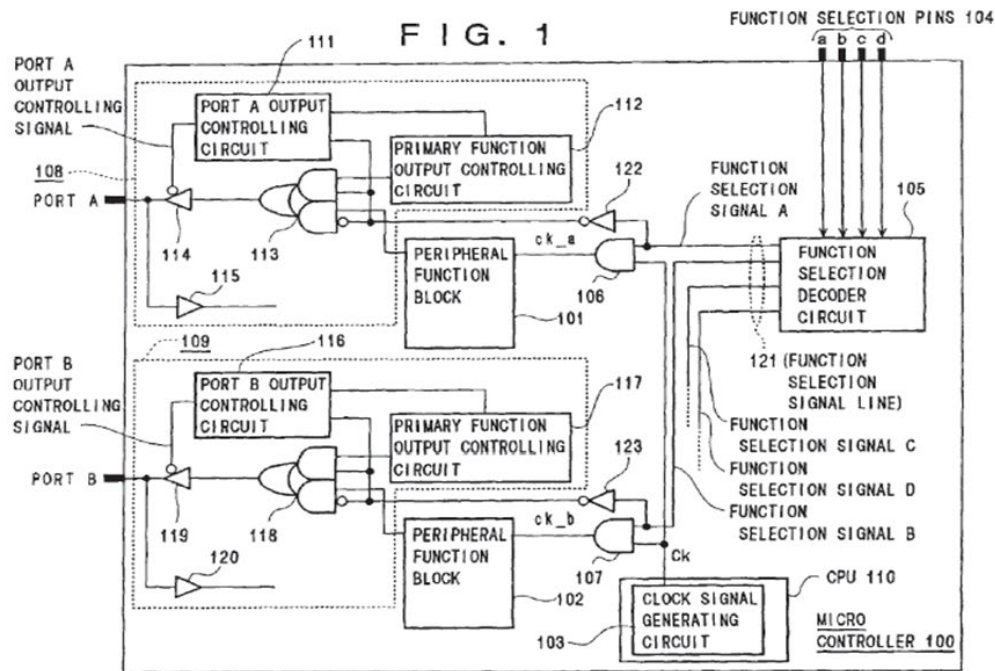


Figure 1 depicts a microcontroller with output ports. *Id.* at 1:47–49. As shown in Figure 1, microcontroller 100 includes input/output ports (ports A and B) and functional blocks (peripheral functional blocks 101 and 102), each associated with one of the ports A and B for performing predetermined functions. *Id.* at 1:63–2:2. Port controlling block 108 controls input/output of data via port A and port controlling block 109 controls input/output of data via port B. *Id.* at 2:14–17. Ports A and B are used for inputting data from and outputting data to an external device relative to microcontroller 100. *Id.* at 2:18–20.

Port controlling block 108 includes port A output controlling circuit 111, primary function output controlling register 112, multiplexer 113, output buffer

114, and input buffer 115 for transmitting a signal input from an external device via port A to an internal circuit. *Id.* at 3:35–44. Port controlling block 109 includes port B output controlling circuit 116, primary function output controlling register 117, multiplexer 118, output buffer 119, and input buffer 120 for transmitting a signal input from an external device via port B to an internal circuit. *Id.* at 3:45–63.

In an operation of inputting an external signal via port B, in response to an output from port B output controlling circuit 116, output buffer 119 becomes inactive, a function of outputting a signal via port B is stopped, and input of an external signal via port B can still be performed. *Id.* at 4:27–39. In this embodiment, the signal input to microcontroller 100 via port B is transmitted to the internal circuit by input buffer 120. *Id.* at 4:39–41.

Cheon (Ex. 1008)

Cheon is titled, “External Device for Mobile Communication Terminal and NFC Method Using the Same,” and issued on September 11, 2012, with a filing date of December 22, 2006. Ex. 1008, codes (54), (45), (22). Cheon relates to “a mobile communication terminal, which enables non-contact NFC with the outside through a Near Field Communication (NFC) unit.” *Id.*, Abstract.

1. Tang as Prior Art

Patent Owner contends Tang is not prior art. PO Resp. 2. According to Patent Owner, “[t]he ’706 Patent claims priority to and is fully supported by [the Provisional Patent], which predates Tang.” *Id.* However, as discussed above in Section II(D), we are persuaded by Petitioner’s arguments that the ’706 patent is not entitled to the priority date of the Provisional Application.

Without the benefit of the priority date of the Provisional Application, the '706 patent does not predate Tang. Accordingly, based on the record before us, we are persuaded that Tang is prior art.

2. Principles of Law Regarding Obviousness

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 nonobviousness.⁵ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Further,

the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.

See In re Keller, 642 F.2d 413, 425 (CCPA 1981); *see also In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012) (citing *Keller*, 642 F.2d at 425).

⁵ Neither party has presented arguments regarding objective evidence of nonobviousness in the instant proceeding.

3. Independent claim 1

a. *“A system for coupling a credit card reader to a mobile device” (Preamble)*

Petitioner contends that the combination of Tang, Kinzalow, and Inoue teaches the features recited in the preamble. Pet. 23. In particular, Petitioner contends, “Tang discloses a *credit card reader 38 coupled to a mobile device 14.*” *Id.* at 23–24 (citing Ex. 1005 ¶¶ 2, 3, 71, 80, Fig. 2 (emphases provided by Petitioner)). Patent Owner does not dispute Petitioner’s analysis of the preamble of claim 1. *See generally* PO Resp. We have reviewed Petitioner’s explanations and supporting evidence regarding this preamble language. Regardless of whether the preamble is limiting, Petitioner has demonstrated persuasively that the combination of Tang, Kinzalow, and Inoue teaches a “system for coupling a credit card reader to a mobile device” recited in the preamble.

b. *“a hardware component that connects to the mobile device and the credit card reader”*

Petitioner contends that the combination of Tang, Kinzalow, and Inoue teaches “a hardware component that connects to the mobile device and the credit card reader.” Pet. 25–26. In particular, Petitioner contends, “Tang explains that the ‘input device captures the card information, the controller converts the card information into an audio signal that is transmitted via the communication link to the communication device.’” *Id.* (citing Ex. 1005

¶¶ 14, 44, 45, 49, 55, 57, 71, 72). That is, “the claimed *hardware component* corresponds to Tang’s ‘controller’ in combination with its ‘communication link.’” *Id.* at 26 (citing Ex. 1005 ¶¶ 3, 13, 80).

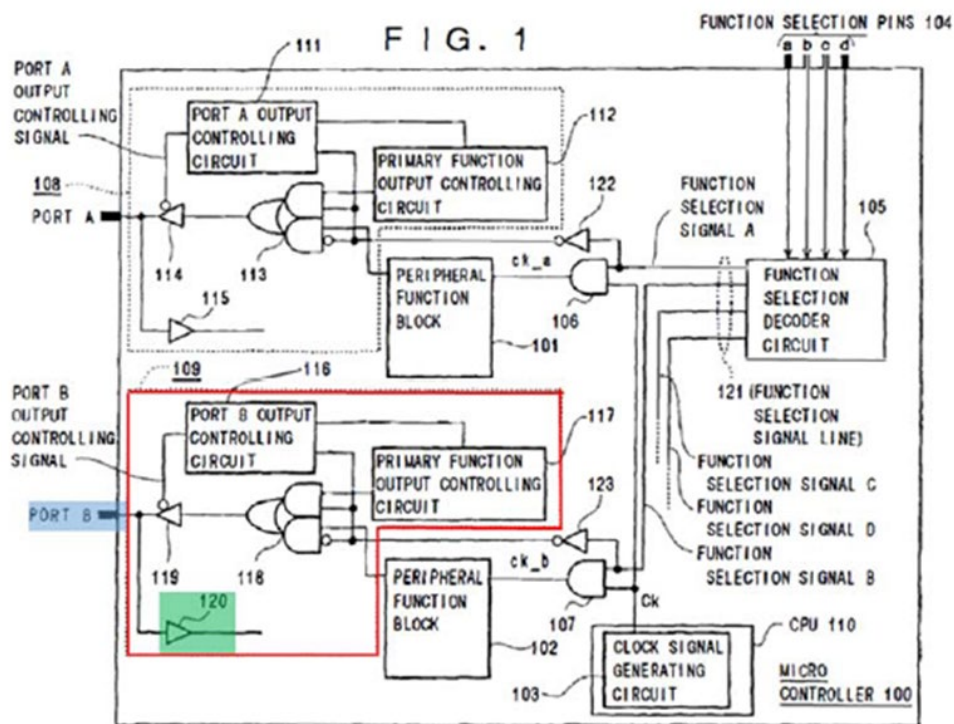
Patent Owner does not separately address Petitioner’s contentions regarding the “hardware component” of claim 1. *See generally* PO Resp. We have reviewed Petitioner’s explanations and supporting evidence regarding this limitation, and find them persuasive. Thus, Petitioner has demonstrated persuasively that the combination of Tang, Kinzalow, and Inoue teaches “a hardware component that connects to the mobile device and the credit card reader.”

b1. “a first mechanism configured to receive data provided by the credit card reader”

Petitioner contends that the combination of Tang and Inoue teaches “a first mechanism configured to receive data provided by the credit card reader.” Pet. 27–30. In particular, Petitioner contends that “Tang’s controller . . . necessarily has a *first mechanism* as the part of the controller *configured to receive data provided by the credit card reader.*” *Id.* at 27 (citing Ex. 1005 ¶¶ 43, 44 (“[A] controller [] linked to said input device”), ¶ 49 (“[A] transaction and communication assembly comprising an input device for capturing information from the transaction card”)). According to Petitioner, “Tang’s controller receives the captured credit card data.” *Id.* (citing Ex. 1005 ¶ 73 (“The input device is used to capture information including and not limited to card data . . . from the transaction card”); Ex. 1002 ¶¶ 84–87).

According to Petitioner, “[l]ike the ’706 patent, Tang does not describe the controller’s configuration in great detail.” Pet. 27 (*compare* Ex. 1005 ¶ 83,

Fig. 5, *with* Ex. 1001, 12:42–13:2; Ex. 1002 ¶ 95). However, Petitioner contends that a person of ordinary skill in the art (“POSITA”) would “consider other prior art for a configuration of Tang’s controller, such as Inoue.” *Id.* at 27–28. Petitioner contends that, as shown in its annotated Figure 1 reproduced below, Inoue discloses a controller including a port controlling block that receives data at a port, which corresponds to the claimed “first mechanism.” *Id.* at 28 (citing Ex. 1007, Fig. 1, Abstract, 3:45–54; Ex. 1002 ¶¶ 72–74).



Annotated Figure 1 of Inoue from the Petition depicts a microcontroller with output ports. Ex. 1007, 3:45–4:59. According to Petitioner, as shown in annotated Figure 1, port controlling block (shown in red) “receives data at port B (blue), which corresponds to the ‘first mechanism.’” Pet. 28 (citing Ex. 1007, Fig. 1, Abstract, 3:52–54; Ex. 1002 ¶¶ 72–74).

Patent Owner responds that “Petitioner does not identify with any specificity what it alleges is the ‘first mechanism configured to receive[] data provided by the credit card reader.’” PO Resp. 58 (citing Pet. 27–32). That is, Patent Owner contends that “Petitioner does not explicitly identify Tang’s controller as an MCU or a [microprocessor] MPU.” *Id.* at 58–59 (citing Pet. 27–32). Instead, Patent Owner alleges, “Petitioner refers to Tang’s MCU as Tang’s ‘controller’ with respect to the first mechanism element to disguise the fact that Petitioner is indeed identifying the same element (Tang’s MCU) as both the first mechanism and the first circuit.” *Id.* at 59.

Patent Owner’s contentions do not undermine Petitioner’s showing.

Contrary to Patent Owner’s contention that “Petitioner does not identify with any specificity what it alleges is the ‘first mechanism configured to receive[] data provided by the credit card reader’” because “Petitioner does not explicitly identify Tang’s controller as an MCU or a MPU” (PO Resp. 58–59), Petitioner relies on the *combination* of Tang *and* Inoue, and not Tang alone, for teaching the claimed “first mechanism.” *See* Pet. 27–30. Here, Petitioner specifies that “Tang’s controller receives the captured credit card data” and acknowledges that “Tang does not describe the controller’s configuration in great detail.” Pet. 27. However, Petitioner also clearly specifies that, as shown in its annotated Figure 1 of Inoue, Inoue discloses a controller including a port controlling block that receives data at a port (port B, shown in blue), which corresponds to the claimed “first mechanism.” Pet. 28. According to Petitioner, “Tang in view of Inoue satisfies the first mechanism configured to receive data provided by the credit card reader at least with port B.” *Id.* (citing Ex. 1002 ¶¶ 94–97) (emphasis omitted). As Dr. Alexander testified in his

deposition, using a controller with a designated input port as disclosed in Inoue would “add efficiencies” by staging the receiving of data. Ex. 2008, 118:5–12. We note Patent Owner does not address Petitioner’s reliance on the data receiving port of Inoue. *See generally* PO Resp. 58–59.

Furthermore, we are not persuaded by Patent Owner’s contention that Petitioner cannot identify the same “element” (Tang’s MCU) as both the “first mechanism” and the “first circuit” (PO Resp. 59), because nothing in the claim language prohibits the claimed “first mechanism” and “first circuit” from being encompassed in a single MCU. Here, claim 1 does not expressly indicate that the “first mechanism” and the “first circuit” are mutually exclusive components, and nothing in claim 1 requires that the “first mechanism” and the “first circuit” be multiple components. In fact, the claim language itself suggests that the “first mechanism” and the “first circuit” can be a single unit, i.e., comprised within a single “hardware component.”

The Specification of the ’706 patent further discloses the first mechanism and the first circuit as a unitary device formed as a single microcontroller. Ex. 1001, Fig. 1, 6:59–7:15. In particular, Figure 1 of the ’706 patent discloses hardware component 004 that includes as a single device: serial port 003 (a first mechanism of claim 1), and FSK generator 006 (a first circuit of claim 1). *Id.* That is, the ’706 patent discloses at least one embodiment wherein the disputed elements are provided in a single hardware component, 004.

Accordingly, we are not persuaded by Patent Owner’s contention that the two elements cannot read on Tang’s MCU. PO Resp. 59; *see also In re Kelley*, 305 F.2d 909, 915–16 (1962) (noting that two limitations can read on

the same structure). Nevertheless, the *combination* of Tang and Inoue teaches the “first mechanism” and the “first circuit” being separate components. In particular, Inoue discloses providing components in a system as separate components (*see* Ex. 1007, Fig. 1), and thus, the combination of Inoue with Tang still teaches that the components may be provided as separate components.

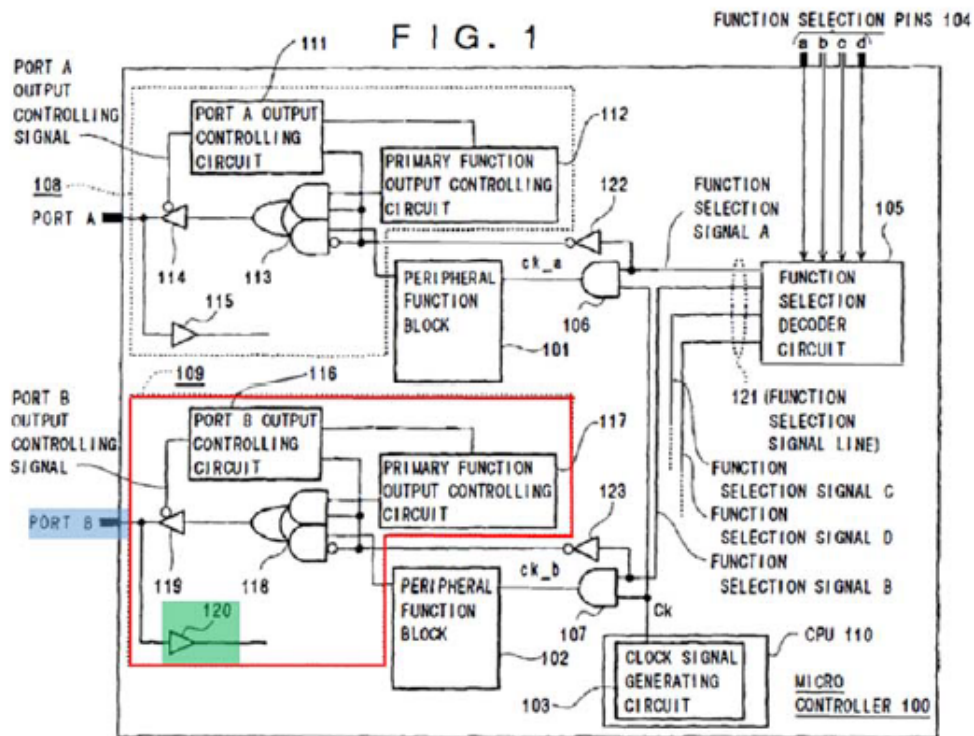
On this record, Petitioner has demonstrated sufficiently that the combination of Tang and Inoue teaches the “first mechanism” recited in claim 1.

b2. “a communication controller for buffering the data received from the credit card reader prior to conversion by a first circuit”

Petitioner contends that the combination of Tang and Inoue teaches “a communication controller for buffering the data received from the credit card reader prior to conversion by a first circuit.” Pet. 33–34. In particular, although Petitioner acknowledges that “Tang does not expressly disclose components of the controller between the controller’s input and the internal MCU of its controller,” Petitioner contends that “Inoue discloses a communication *controller for buffering the data* corresponding to port controlling block 109 of controller 100.” *Id.* at 33. According to Petitioner, “Inoue discloses a controller that receives data from an external source and then processes the received data.” *Id.* at 28 (citing Ex. 1007, Abstract, Fig. 1, 3:45–54).

Petitioner contends that, as shown in its annotated Figure 1, reproduced below, Inoue discloses a port controlling block that corresponds to the

“communication controller for buffering the data,” which comprises an “input buffer” that corresponds to the claimed “data buffer.” Pet. 33–34 (citing Ex. 1007, Fig. 1, 2:15–17, 3:52–54 (“[buffer 120 is] an input buffer [] for transmitting a signal input from an external device via the port B to the internal circuit”)); Ex. 1002 ¶¶ 101–02).



Annotated Figure 1 depicts Inoue’s microcontroller with output ports. Ex. 1007, 3:45–4:59. According to Petitioner, as shown in annotated Figure 1 of Inoue, port controlling block (shown in red) is “for controlling input/output of data via the port B”, while input buffer 120 (shown in green) is the “data buffer.” Pet. 33–34 (citing Ex. 1007, Fig. 1, 2:15–17, 3:52–54; Ex. 1002 ¶¶ 101–02). Thus, according to Petitioner, although “Tang does not disclose the configuration between the input device and its MCU, . . . Inoue does.” *Id.* at

31. Petitioner contends that “a POSITA, noting that Tang’s disclosure lacked detail of the configuration between its MCU and external input device, would have looked to another reference for a configuration,” wherein “Inoue disclose such a configuration.” *Id.* (citing Ex. 1002 ¶ 95).

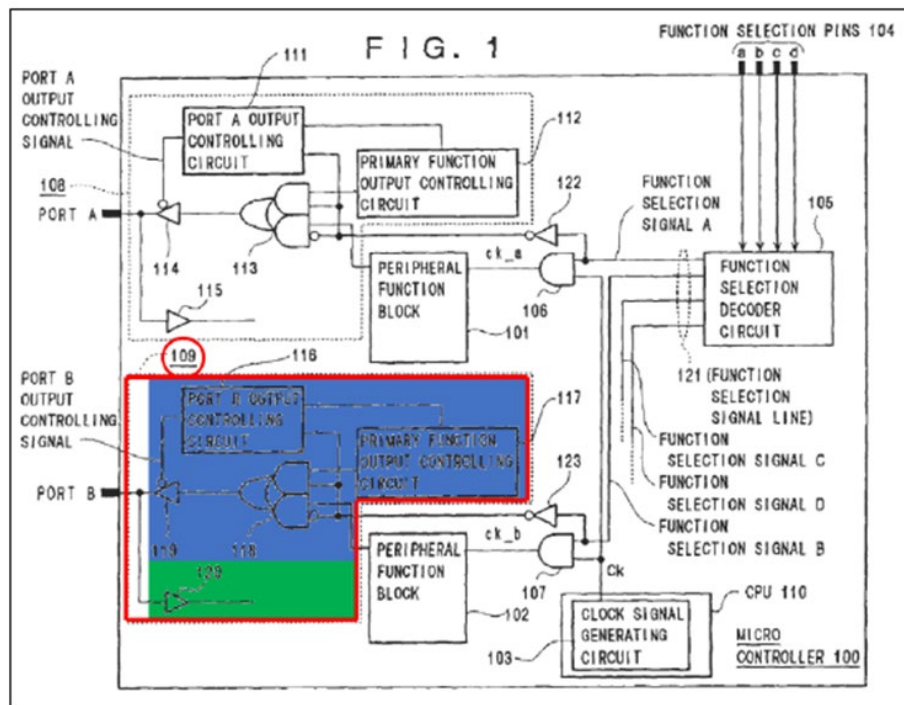
According to Petitioner, “using a controller with a designated input port and an input buffer as disclosed in Inoue would make the system more efficient.” Pet. 31–32 (citing *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1368 (Fed. Cir. 2006) (“[A]n implicit motivation to combine exists . . . when the ‘improvement’ is technology-independent and the combination of references results in a product . . . that is more desirable, for example because it is . . . more efficient.”)).

Relying on Dr. Alexander’s testimony, Petitioner contends, Combining the teachings of Tang’s controller receiving data from an input device with Inoue’s teachings of a controller having a port to receive data from external devices and an input buffer to temporarily store the received data would have employed a known technique—*e.g.*, controller with port and input buffer in Inoue to improve a similar device (a controller of Tang) in the same way, *i.e.*, to receive and process data. Pet. 32 (citing Ex. 1002 ¶¶ 95–97).

Accordingly, Petitioner contends “[a] POSITA would have been motivated to improve Tang by using a controller with a port for receiving data and an input buffer for storing data as taught by Inoue.” Pet. 32. Indeed, according to Dr. Alexander, “using a buffer to ensure data integrity is a known way for a controller to control data input/output,” wherein “a POSITA would expect that applying the teachings of Inoue’s controller to Tang’s controller would yield predicable and successful results.” *Id.* (citing Ex. 1002 ¶ 97).

In response, Patent Owner contends that, in Tang, “there is nothing between the card reader input and the MCU except for an electrical wire/connector,” and “[d]espite the lack of need for additional circuitry between Tang’s card reader and MCU, Petitioner asserts Inoue’s port controlling block 109 ‘corresponds to the *communications controller for buffering the data*,’” wherein “Petitioner specially asserts Inoue’s single bit logic gate digital buffer as corresponding to the claimed data buffer.” PO Resp. 63–64 (citing Pet. 33). However, Patent Owner contends, “Inoue’s single bit logic gate digital buffer is the only part of the port controlling block that receives input data,” whereas the claim “requires a separate first mechanism and communications controller for buffering data.” *Id.*

Patent Owner references its annotated Figure 1 of Inoue, reproduced below, to explain.



Annotated Figure 1 from the Patent Owner Response depicts Inoue's microcontroller with output ports. Ex. 1007, 3:45–4:59. According to Patent Owner, as shown in annotated Figure 1 of Inoue, port controlling block comprises output circuitry (shown in blue) and input circuitry (shown in green). PO Resp. 66. Patent Owner contends that “Inoue's single logic gate digital buffer cannot satisfy two separate claim elements.” *Id.* at 64–66 (citing Pet. 34). That is, according to Patent Owner, although Petitioner relies on Inoue's port controlling block for the claimed “first mechanism,” Petitioner also relies upon Inoue's port controlling block for the claimed “communication controller for buffering the data,” wherein “[w]ithin Inoue's port controlling block, there is a single element that has anything to do with incoming data—the single logic gate digital buffer.” *Id.* at 67 (citing Pet. 58, 63).

Furthermore, Patent Owner contends that, “[i]mportantly and significantly, . . . the input buffer 120 [of Inoue] is a ‘single logic gate,’ which means it buffers data ‘one bit at a time—that is, the digital data is buffered serially.’” PO Resp. 55 (citing Pet. 30), 70. Patent Owner argues that adding a single bit buffer would not increase efficiency of the combined device. *Id.* at 31. Patent Owner continues that a credit card is often encoded with over 100 bits of data and that buffering the data one bit at a time would not be efficient. *Id.* Thus, according to Patent Owner, “adding Inoue's single bit digital buffer to the Tang system would only introduce a propagation delay for the time to send data from the card reader to the Tang MCU.” *Id.* at 73.

Patent Owner then contends that “[the] combination [of Tang and Inoue] would render the Tang system inoperable for its intended purpose.” PO Resp. 30 (citing Ex. 2001 ¶ 74), 69. Specifically, Patent Owner posits that

[i]f . . . one was to place a single bit digital [buffer] between the credit card reader and the MCU, the digital buffer would render the modified system useless for processing transactions involving a magnetic swipe of a credit card, which generates analog data.

PO Resp. 30–31 (citing Ex. 2001 ¶ 74).

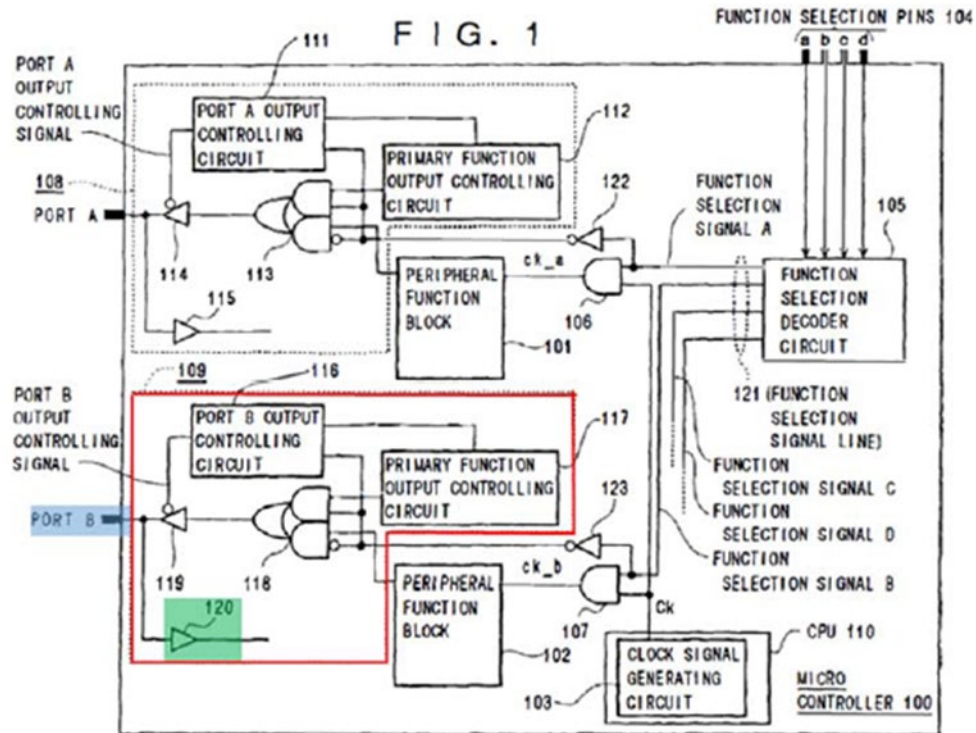
Thus, Patent Owner contends that “there is no motivation to add Inoue[’s] bi-directional input/output port controller to Tang, especially when Tang discloses an input only pathway of data from its input device.” PO Resp. 55. According to Patent Owner, “[a]dding a one-bit buffer would add complexity and cost with no benefit to Tang,” wherein “there are no problems presented in Tang or provided by Inoue that a bi-directional digital port controller would fix or improve.” *Id.* at 55–56. Instead, according to Patent Owner, “Inoue’s one-bit digital buffer would interfere with Tang’s functionality and render the Tang system unable to operate as intended.” *Id.* at 56, 70–71. Accordingly, “[n]o POSITA would be motivated to add a useless component; it would prevent the system from processing analog data received from the card reader.” *Id.* (citing Ex. 2001 ¶¶ 66–69).

Patent Owner’s contentions do not undermine Petitioner’s showing.

Although Patent Owner contends that Petitioner’s use of “Inoue’s single logic gate digital buffer cannot satisfy two separate claim elements” (PO Resp. 64–66 (citing Pet. 34)), the claim language does not prohibit multiple features of the claims from encompassing a single buffer.

Nevertheless, we note that Petitioner did not rely on Inoue’s single logic gate digital buffer for two separate claim elements. In particular, Petitioner relies on Inoue’s port B as the “first mechanism” and relies on Inoue’s input

buffer 120 as the “data buffer.” *See* Pet. 28, 33–34. Petitioner’s annotated Figure 1 of Inoue is reproduced below.



Annotated Figure 1 from the Petition depicts Inoue’s microcontroller with output ports. Ex. 1007, 3:45–4:59. According to Petitioner, as shown in annotated Figure 1 of Inoue, data is received at “port B (blue), which corresponds to the ‘first mechanism’” (Pet. 28 (citing Ex. 1007, Fig. 1, Abstract, 3:52–54; Ex. 1002 ¶¶ 72–74)), and input buffer 120 (shown in green) is the “data buffer.” Pet. 33–34 (citing Ex. 1007, Fig. 1, 2:15–17, 3:52–54; Ex. 1002 ¶¶ 101–02). Accordingly, we are unpersuaded by Patent Owner’s contention that Petitioner uses “Inoue’s single logic gate digital buffer [to] satisfy two separate claim elements.” PO Resp. 64–66.

We also are not persuaded by Patent Owner's contention that "there is no motivation to add Inoue bi-directional input/output port controller to Tang, especially when Tang discloses an input only pathway of data from its input device." PO Resp. 55. As Dr. Alexander testified in his cross-examination by Patent Owner, "Inoue discloses the concept of using buffers as a mechanism for data entry and one would apply that to - to the Tang concept." Ex. 2008, 118:5–20. Here, Petitioner contends "a POSITA would expect that applying the teachings of Inoue's controller to Tang's controller would yield predictable and successful results." Pet. 32 (citing Ex. 1002 ¶ 97). According to Dr. Alexander, Inoue's buffer concepts "add efficiencies like the ability to stored received data while processing previously received data 'a more stable staging of the data so that the microprocessor can respond to that available data.'" Ex. 2008, 118:5–12.

A combination of familiar elements according to known methods "is likely to be obvious when it does no more than yield predictable results." *See KSR*, 550 U.S. at 416. As Petitioner points out, "both Tang and Inoue disclose a controller that processes data received from external devices." Pet. 31. As *KSR* instructs, "[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one," wherein "[i]f a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability" because "a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *KSR*, 550 U.S. at 417.

Although Patent Owner contends that “Inoue’s one-bit digital buffer would interfere with Tang’s functionality and render the Tang system unable to operate as intended” (PO Resp. 56, 70–71), the test for obviousness is not whether the Inoue’s system may be bodily incorporated into Tang’s system. Rather, the test is what the combined teachings of Tang and Inoue would have suggested to those of ordinary skill in the art. *See Keller*, 642 F.2d at 425. Here, as Dr. Alexander testified in his cross-examination by Patent Owner, Petitioner is proposing to incorporate Inoue’s buffer concepts to “add efficiencies like the ability to stored received data while processing previously received data ‘a more stable staging of the data so the microprocessor can respond to that available data.’” Ex. 2008, 118:5–12. As Dr. Alexander testifies, Petitioner is not proposing the particular buffer of Inoue but rather any buffer “that was appropriate” may be applied. Ex. 2008, 119:2–22.

We are persuaded by Petitioner’s contention that, “a POSITA, noting that Tang’s disclosure lacked detail of the configuration between its MCU and external input device, would have looked to another reference for a configuration,” wherein “Inoue disclose[s] such a configuration” (Pet. 31 (citing Ex. 1002 ¶ 95)), wherein Inoue proposes using a buffer for providing “a more stable staging of data.” Ex. 2008, 118:5–12. Here, Petitioner contends that a POSITA would have understood that a buffer as suggested in Inoue would enhance efficiency of the combined device and would have predictably improved the controller of Tang using the known buffer technique of Inoue to provide the predictable result of bi-directional data communications. Pet. 30–32 (citing Ex. 1002, ¶¶ 95–97). Petitioner’s rationale that a POSITA would

have combined Tang and Inoue is supported by the preponderance of the evidence.

On this record, Petitioner has demonstrated sufficiently that the combination of Tang and Inoue teaches the “a communication controller for buffering the data” recited in claim 1.

b3. “the first circuit configured to convert the data to an analog audio signal”

Petitioner contends that Tang teaches “the first circuit configured to convert the data to an analog audio signal.” Pet. 34–35. In particular, Petitioner contends that, in Tang, “the MCU (*first circuit*) . . . converts received analog or digital transaction *data* into an *analog audio signal* for transmission to the mobile phone.” *Id.* at 34 (citing Ex. 1005 ¶¶ 14, 86, 90). Petitioner contends that, in Tang, “after ‘the input device’—the credit card reader—‘captures the card information, the controller converts the card information into an audio signal that is transmitted via the communication link.’” *Id.* (citing Ex. 1005 ¶ 14). Further, Petitioner contends that “Tang also discloses that the ‘transaction data whether originally received in analog format or in encrypted digital format is converted by the MCU 50 into an *analog audio signal*.’” *Id.* at 34–35 (citing Ex. 1005 ¶ 86). According to Petitioner, “Tang elaborates further, noting that ‘the binary digital signal, whether originally received in analog format or in encrypted digital format is compressed by the MCU 50 and converted into a hexadecimal signal,’ which is ‘then further compressed by the MCU 50 and converted into a dual-tone multi-frequency (DTMF) audio signal.’” *Id.* at 35 (citing Ex. 1005 ¶ 90).

Patent Owner contends that Petitioner is “implicitly” asserting that “Tang’s MCU corresponds to the first circuit.” PO Resp. 64–65 (citing Pet. 34). However, according to Patent Owner, Petitioner also refers to Tang’s MCU as Tang’s “controller” with respect to the “first mechanism element,” wherein “Petitioner is indeed identifying the same element (Tang’s MCU) as both the first mechanism and the first circuit.” *Id.* at 59.

Patent Owner’s contentions do not undermine Petitioner’s showing.

As discussed above in section II(E)(3)(b1), we are not persuaded by Patent Owner’s contention that Petitioner cannot identify the same element (Tang’s MCU) as both the “first mechanism” and the “first circuit” (PO Resp. 64–65; *see also id.* 59), because claim language does not prohibit the claimed “first mechanism” and “first circuit” from being encompassed in a single MCU. As discussed, the claim language itself suggests that the “first mechanism” and the “first circuit” are comprised within a single “hardware component,” and even the Specification of the ’706 patent discloses the first mechanism and the first circuit as a unitary device formed as a single microcontroller. *See* Ex. 1001, Fig. 1, 6:59–7:15. Nevertheless, the *combination* of Tang and Inoue teaches the “first mechanism” and the “first circuit” being separate elements, since Inoue itself discloses providing for separate elements. *See, e.g.,* Ex. 1007, Fig. 1.

On this record, Petitioner has demonstrated sufficiently that the combination of Tang and Inoue teaches the “first circuit” recited in claim 1.

b4. “a connector to couple the hardware component to an audio input port of the mobile device,” wherein “the connector bridges a microphone pin of the audio input port such that the mobile device detects a presence of the

connector in the audio input port,” and “the connector provides an audio communication between the hardware component and the mobile device and communicates the analog audio signal from the hardware component to the mobile device”

Petitioner contends that the combination of Tang, Kinzalow, and Inoue teaches “a connector to couple the hardware component to an audio input port of the mobile device” Pet. 35–42. In particular, Petitioner contends “Tang discloses a ‘communication assembly 16,’ shown in Figure 2 . . . , which ‘include[s] a portable transaction apparatus 12,’ . . . ‘in the form of a point of sale (POS) device linked to a communication device in the form of mobile phone 14 via a communication link in the form of a cable 30.’” *Id.* (citing Ex. 1005 ¶ 80, Figs. 2, 3). Additionally, Petitioner contends that “Kinzalow discloses a connector that bridges a microphone pin of a mobile phone’s audio port such that the mobile device detects a presence of the connector in the audio input port.” *Id.* at 36–39 (citing Ex. 1006, 7:46–62). Petitioner also contends that “Tang discloses that the converted audio signal is ‘[s]uitable for transmission over the analog communication link between the transaction device and the communication device.’” *Id.* at 42 (citing Ex. 1005 ¶ 86).

Patent Owner does not separately address Petitioner’s contentions regarding the “connector” of claim 1. *See generally* PO Resp. We have reviewed Petitioner’s explanations and supporting evidence regarding these limitations, and find them sufficient. Thus, Petitioner has demonstrated persuasively that the combination of Tang, Kinzalow, and Inoue teaches “a

connector to couple the hardware component to an audio input port of the mobile device,” as claimed.

c. “second mechanism on the mobile device configured to receive the analog audio signal and convert the analog audio signal into binary data”

Petitioner contends that the combination of Tang, Kinzalow, and Inoue teaches “a second mechanism on the mobile device configured to receive the analog audio signal and convert the analog audio signal into binary signal.” Pet. 42–43. In particular, Petitioner contends that Tang discloses an embodiment in which “software application of controller 51 receives the analog audio signal from the controller and *converts the analog audio signal into binary data.*” *Id.* at 43 (citing Ex. 1005 ¶ 100 (“This software application is used to convert between audio and digital signal and to receive and transmit and [sic] audio data to and from the hands-free interface”)).

Petitioner references Tang’s Figures 7 and 8 to explain the embodiment (“second embodiment”). *See* Pet. 45. Petitioner contends that, as shown in the second embodiment set forth in Figures 7 and 8 reproduced below, Tang discloses that “the ‘analog signal from the magnetic card’ is sent to a ‘software application of the controller 51 [that] converts the received signal back to binary data for example as stored on the magnetic card 34[sic].’” *Id.* at 43 (citing Ex. 1005, Figs 7, 8, ¶¶ 101–102; Ex. 1002 ¶ 113).

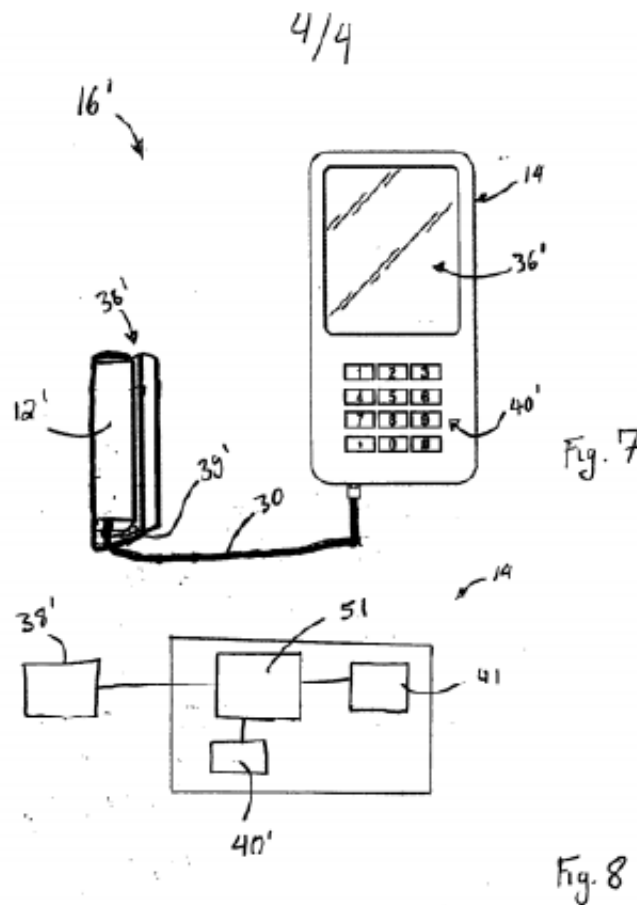


Figure 7 of Tang discloses a “transaction/communication assembly,” and Figure 8 of Tang discloses a “control system of the communication device of the transaction/communication assembly” in a second exemplary embodiment. Ex. 1005 ¶¶ 69–70.

According to Petitioner, “[t]he *second mechanism* in Tang is the software application of controller 51, which Tang discloses in its embodiment for Figures 7 and 8,” wherein “transaction apparatus 12’ . . . includes an input device 38’ in the form of a slot 39’ for capturing information from a transaction card 24 and sends this information to the mobile phone 14 via cable 30.” Pet. 45 (citing Ex. 1005, Figs. 7, 8, ¶¶ 99–100; Ex. 1002 ¶ 117).

Petitioner contends that this second embodiment shown in Figures 7–8, similar to Tang’s first embodiment shown in Figures 1–5, “transmit[s] the analog audio signal in the *same* analog format through the *same cable 30 and connector 32 to the same mobile phone 14.*” *Id.* at 46 (citing Ex. 1005, Figs. 1–5, ¶¶ 80–86, *comparing* Ex. 1005, Fig. 2, ¶ 86, *with id.*, Fig. 7, ¶ 101).

Petitioner reasons that, “[b]ecause both embodiments use the same mobile phone 14, a POSITA would have understood that the software application in mobile phone 14 for the second embodiment [shown in Figures 7 and 8] could be used in the same mobile phone 14 for the first embodiment [shown in Figures 1–5].” *Id.* That is, according to Petitioner, a POSITA would have understood that software application of the controller 51 in mobile phone 14 would convert the received audio signal back to binary data to upload data over to transaction server 18 in both first and second embodiments. *Id.*; *see also id.* at 43

Patent Owner responds that both first and second embodiments of Tang “support transmission of an audio signal without extracting the information carried by the signal, including by transmitting a digitized format of the signal.” PO Resp. 77. According to Patent Owner, in Tang’s second embodiment shown in Figure 7 and 8, “GPRS is used,” wherein “the audio signal’s analog waveform is digitized and placed into GPRS packets.” *Id.* However, according to Patent Owner, assuming *arguendo* that controller 51 of Tang receives and processes analog audio signals coming from the direction of card reader 38, “controller 51 cannot convert those signals into binary data” as required by the claim, but instead “[c]ontroller 51 would merely digitize the analog audio signals for transmission in GPRS packets to the transaction server

18.” *Id.* at 80. In particular, Patent Owner contends that “controller 51 would create a digital representation of the analog audio waveform without extracting the binary data” and “binary data extraction occurs exclusively at the transaction server 18.” *Id.* at 80 (emphasis omitted). Furthermore, even if controller 51 were capable of converting analog audio signals associated with card reader 38 into binary data for presentation on display screen 36’, according to Patent Owner, “such conversion would not satisfy Claim 1” because claim 1 recites “to upload the binary data to a cloud service for decoding- not to display on the mobile device 14.” *Id.* at 80–81.

Patent Owner’s contentions do not undermine Petitioner’s showing.

Although Patent Owner contends that Tang “support[s] transmission of an audio signal without extracting the information carried by the signal” (PO Resp. 77), as Petitioner points out, in Tang, “software application of controller 51 receives the analog audio signal from the controller and converts the analog audio signal into binary data.” Pet. 42–43 (citing Ex. 1005 ¶ 100). In particular, Tang’s software application of controller 51 converts the received signal back to binary data as stored on the transaction card. *See* Ex. 1005 ¶ 100. We are persuaded by Petitioner’s contention that a POSITA would have understood that software application of the controller 51 in mobile phone 14 would convert the received audio signal back to binary data to upload data over to transaction server 18. Pet. 43, 46.

Thus, we are unpersuaded by Patent Owner’s contention that Tang’s “controller 51 cannot convert [analog] signals into binary data,” “would merely digitize the analog audio signals for transmission in GPRS packets to the transaction server 18,” “would create a digital representation of the analog

audio waveform without extracting the binary data,” wherein any conversion of analog audio signals associated with card reader 38 into binary data is “for presentation on display screen 36.” PO Resp. 80–81.

We also note Patent Owner merely provides conclusory statements that Tang’s controller 51 cannot convert analog signals into binary data, without presenting any factual evidentiary support. Mere attorney arguments and conclusory statements that are unsupported by factual evidence are entitled to little probative value. *In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997); *see also In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984); and *Ex parte Belinne*, No. 2009-004693, slip op. at 7-8 (BPAI Aug. 10, 2009) (informative), available at <http://www.uspto.gov/web/offices/dcom/bpai/its/fd09004693.pdf>.

On this record, Petitioner has demonstrated sufficiently that the combination of Tang and Inoue teaches the “second mechanism” recited in claim 1.

d. “third mechanism on the mobile device configured to upload the binary data to a cloud service for decoding”

Petitioner contends that the combination of Tang, Kinzalow, and Inoue teaches “a third mechanism on the mobile device configured to upload the binary data to a cloud service for decoding.” Pet. 47–51. According to Petitioner, “[the] ’706 patent describes a ‘cloud service’ in the context of a mobile device sending data through a network to a remote server.” *Id.* at 48 (citing Ex. 1001, 12:15–22 (“A ‘cloud service’ could decode the signals. That is, the phone could be relatively ‘dumb’, and a device could be used to communicate to the ‘cloud’ through a mobile phone. . . . The data would then be uploaded without significant change to a server, where it would be

decoded.”); Ex. 1002 ¶ 122). According to Petitioner, based on the intrinsic evidence, including the prosecution history of the ’706 patent, “a POSITA would have understood that the recited ‘cloud service for decoding’ refers to a remote server to which a mobile device communicates through a network for decoding.” Pet 49 (citing Ex 1002 ¶ 122).

Petitioner then contends “Tang[] discloses a transceiver (*third mechanism*) on the mobile phone configured to upload the binary data, which is in the form of GPRS data, over a communication network to a remote processor assembly 22 (*cloud service*), a network of remote servers including a transaction server 18 that *decodes* the received data.” Pet. 47–48 (citing Ex. 1005, Fig. 1, ¶ 3). According to Petitioner, various paragraphs in Tang describe the uploading of data by the “third mechanism” to a “cloud service for decoding.” *Id.* at 51 (citing, e.g., Ex. 1005 ¶¶ 101–102 (“The transaction card data, along with the transaction data, are encoded and sent to the transaction server 18 [in the form of general-packet radio service] (GPRS) data. The transaction server 18 decodes the transaction data, reformats and sends [this data] to the processor/issuer 20 for approval”), ¶ 104).

Petitioner refers to Figure 1 of Tang, reproduced below, to explain:

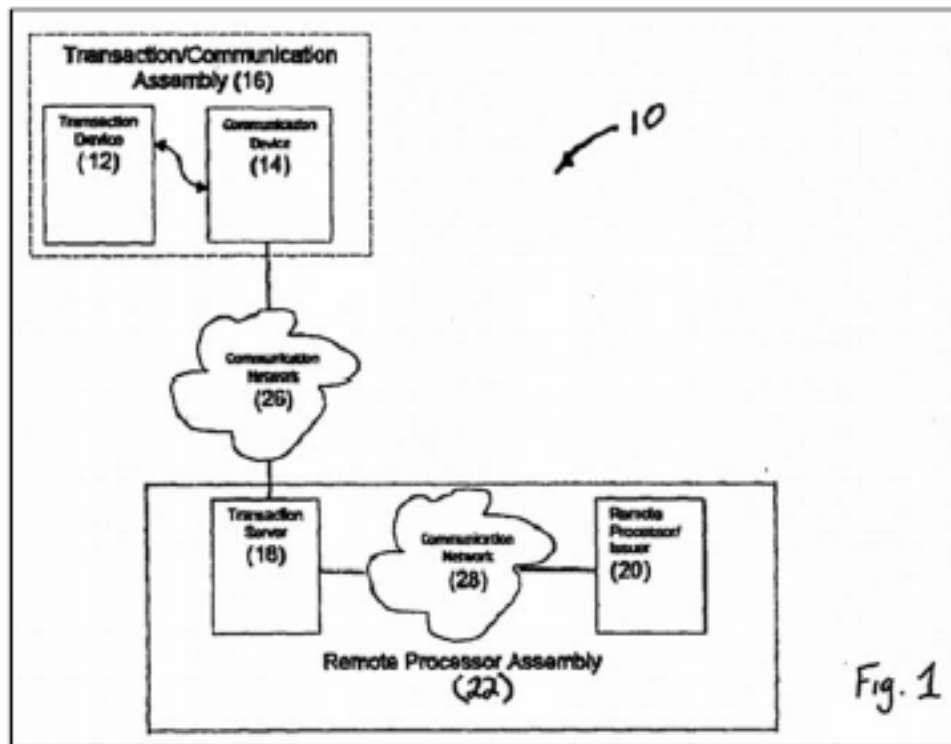


Figure 1 of Tang shows a transaction network that includes: a transaction device and a communication device, forming transaction and communication assembly; a communication network; and a transaction server and a transaction processor/issuer, forming a remote processor assembly.

Ex. 1005 ¶ 79. According to Petitioner, as shown in Figure 1 of Tang, “communication device 14 uploads data over communication network 26 to remote processor assembly 22 that includes a transaction server 18.” Pet. 49 (citing Ex. 1005, Fig. 1, ¶ 3 (“[noting] Tang’s wireless device mobile phone includes a transceiver for uploading data to remote computers”)); Ex. 1002 ¶ 123). Transaction server 18 then “decodes the received data.” Pet. 47–48.

In response, Patent Owner contends claim 1 “requires a third mechanism on the mobile device configured to upload the binary data to a cloud service

for decoding.” PO Resp. 81. Patent Owner explains that, “[w]ith the mobile phone of the proposed combination [of Tang and Inoue] configured to send binary data to a server that cannot even receive binary data, there is no third mechanism configured to upload binary data to a cloud service for decoding.” *Id.* at 81–82 (emphasis omitted). According to Patent Owner, in claim 1, “audio signals are converted into binary data at the mobile device, and the binary data is uploaded to a cloud service for decoding,” whereas in Tang, “audio signals are sent to transaction server 18, and transaction server 18 converts the audio signals into digital signals.” *Id.* at 82.

Patent Owner then contends that, “[t]o the extent Tang’s server does any decoding, it is limited to decoding audio signals in order to extract the binary data from the audio signals,” wherein “Tang’s transaction server 18 converting audio into binary data” does not satisfy the claim requirement. *Id.* 82–83. Patent Owner contends, like the Provisional Application, Tang discloses packet-level decoding, wherein “[t]he [Institution] Decision, however, advises that such packet-level decoding is not the decoding that is required by Claim 1.” *Id.* at 83. According to Patent Owner, Petitioner’s expert, Dr. Alexander opines that “Tang’s disclosure of the transaction server 18 receiving, assembling, and formatting GPRS data . . . does not constitute the decoding” as claimed. *Id.* at 83–84.

Patent Owner’s contentions do not undermine Petitioner’s showing.

Although Patent Owner contends that, in the combination of Tang and Inoue, there is “no third mechanism configured to upload binary data to a cloud service for decoding” (PO Resp. 81–82 (emphasis omitted)), we are persuaded by Petitioner’s contention that, as shown in Figure 1 of Tang,

“communication device 14 uploads data over communication network 26 to remote processor assembly 22 that includes a transaction server 18” for decoding. Pet. 48 (citing Ex. 1005, Fig. 1, ¶ 3). As Petitioner contends, Tang discloses “a transceiver (*third mechanism*) on the mobile phone configured to upload the binary data, which is in the form of GPRS data, over a communication network to a remote processor assembly 22 (*cloud service*), a network of remote servers including a transaction server 18 that *decodes* the received data.” *Id.* at 47–48.

Although Patent Owner contends that, in Tang, “audio signals are sent to transaction server 18” and not binary data (PO Resp. 82), in his declaration, Dr. Alexander testifies that transmitting with binary data over communication network 26 “is more secure than transmission of analog data,” wherein, in a further embodiment, “Tang discloses the transmission of encoded GPRS data to the transaction server 18.” Ex. 1002 ¶¶ 120–21 (citing Ex. 1005 ¶ 102). Thus, Dr. Alexander testifies that a POSITA would have been motivated to transmit binary data to transaction server 18. *Id.* We are persuaded that a POSITA would have found it obvious to securely convert the analog audio signal to binary data on mobile phone 14 (as disclosed in Tang’s first embodiment), and then transfer such binary data to the transaction server 18 for decoding (as disclosed in Tang’s second embodiment). *See* Pet. 52; Ex. 1002 ¶¶ 120–21.

We are not persuaded by Patent Owner’s contention that Tang’s server’s decoding is “limited to decoding audio signals in order to extract the binary data from the audio signals,” wherein, like the Provisional Application, this decoding by Tang is merely packet-level decoding. Pet. 82–83. As

Dr. Alexander testified in cross-examination by Patent Owner, a POSITA would understand the claimed “decoding” step to encompass decoding “[t]he name, the account number, expiration date, and . . . country codes and currency codes. . . . that’s stored on the credit card.” Ex. 2008, 29:22–30:7. Although Patent Owner points out that Dr. Alexander opined that “Tang’s disclosure of the transaction server 18 receiving, assembling, and formatting GPRS data . . . does not constitute the decoding” as claimed (PO Resp. 83–84), as Petitioner points out, more than just the receiving, assembling, and formatting, Tang also discloses decoding the data. Tr. 38. According to Dr. Alexander, decoding is different from the TCP/IP protocol set forth in the Provisional Application, where data is transferred in series of smaller TCP packets and reassembled at the destination, i.e., “not decoding the data, [but] just taking the segments of data and reassembling them into one block.” Ex. 2008, 39:12–40:2. As Dr. Alexander testified regarding the TCP/IP protocol, “[r]eassembly in my understanding would not be considered decoding to extract credit card information such as name and account number.” Ex. 2008, 44:7–19.

Different from the Provisional Application, Tang discloses a transaction server that decodes to recover the transaction card data and the payment details, wherein the transaction data is reformatted and sent to a remote processor/issuer, which then either approves or rejects the transaction. *See* Ex. 1005 ¶ 98. That is, Tang is decoding the data to recover data, not just mere depacketization of data. *Id.*

Based on these teachings by Tang, and the testimony of Dr. Alexander, we are persuaded by Petitioner’s contention that Tang teaches uploading binary data to a cloud service, wherein the data is decoded at the cloud service.

Thus, Petitioner has demonstrated persuasively that the combination of Tang, Kinzalow, and Inoue teaches the “third mechanism” recited in claim 1.

4. Dependent claim 4

Petitioner provides explanations and supporting evidence regarding the limitations of dependent claim 4. *See generally* Pet. 53–55. In particular, Petitioner provides explanation and evidence that Tang, Kinzalow, and Inoue, teach all limitations of the claim. *Id.* Petitioner also provides explanation and evidence why a skilled artisan would have combined Tang, Kinzalow, and Inoue. *Id.* at 30–53.

Patent Owner does not address separately Petitioner’s showing as to claim 4, but merely contends that “[f]or the same reasons Petitioner has failed to set forth a *prima facie* showing that Claim 1 is obvious as described above, Petitioner has also failed to set forth a *prima facie* showing that Claim 4 is obvious.” *See* PO Resp. 84–85. We have reviewed Petitioner’s explanations and supporting evidence regarding the limitations of claim 4, and we find them persuasive. Thus, Petitioner has demonstrated persuasively that the combination of Tang, Kinzalow, and Inoue teaches the limitations of dependent claim 4.

5. Dependent claims 2 and 3

Petitioner provides explanations and supporting evidence regarding the limitations of dependent claims 2 and 3. *See generally* Pet. 63–69. In particular, Petitioner provides explanation and evidence that Tang, Kinzalow, Inoue, and Cheon teach all limitations of these claims. *Id.* Petitioner also provides explanation and evidence why a skilled artisan would have combined Tang, Kinzalow, Inoue, and Cheon. *Id.*

Patent Owner does not address separately Petitioner’s showing as to these claims, but merely contends that “for the same reasons Petitioner has failed to set forth a *prima facie* showing that Claim 1 is obvious, Petitioner has failed to set forth a *prima facie* showing that Claims 2 and 3 are obvious.” *See* PO Resp 86. We have reviewed Petitioner’s explanations and supporting evidence regarding the limitations of claims 2 and 3, and we find them persuasive. Thus, Petitioner has demonstrated persuasively that the combination of Tang, Kinzalow, Inoue and Cheon teaches the limitations of dependent claims 2 and 3.

F. Patent Owner’s Consent to PTAB adjudication.

Patent Owner contends that the *inter partes* review process is unconstitutional because the judges of PTAB are not properly appointed under “the Appointments Clause.” PO Resp. 86–87. In particular, Patent Owner contends that “any decision the Panel issues that deems any claim of the ’706 Patent invalid is void as rendered by a Panel that was not constitutionally appointed.” *Id.* (citing *Arthrex, Inc. v. Smith & Nephew, Inc.*, 941 F.3d 1320, 1328 (Fed. Cir. 2019)).

We, decline to consider Patent Owner’s constitutional challenge as the issue has been addressed by the Federal Circuit’s decision, which addressed this issue. *See Arthrex*, 941 F.3d at 1337 (“This as-applied severance . . . cures the constitutional violation.”).

III. CONCLUSION⁶

For the foregoing reasons, we are persuaded on the record at hand that Petitioner has demonstrated by a preponderance of the evidence that claims 1–4 of the '706 patent based on the grounds discussed above are unpatentable.

IV. ORDER

For the foregoing reasons, it is

ORDERED that, based on a preponderance of the evidence, claims 1–4 of U.S. Patent 9,800,706 B2 have been shown to be unpatentable;

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.

⁶ 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).

In summary:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 4	103	Tang, Kinzalow, Inoue,	1, 4	
2, 3	103	Tang, Kinzalow, Inoue, Cheon	2, 3	
Overall Outcome			1–4	

IPR2019-00466
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