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Paper 56
Entered: February 3, 2016

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HTC CORPORATION and HTC AMERICA, INC.,
Petitioner,

v.

NFC TECHNOLOGY, LLC,
Patent Owner.

Case IPR2014-01198
Patent 6,700,551 B2

Before JAMES B. ARPIN, NEIL T. POWELL, and
BART A. GERSTENBLITH, *Administrative Patent Judges*.

ARPIN, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

A. Background

HTC Corporation and HTC America, Inc. (collectively, "Petitioner") filed a Petition (Paper 1, "Pet.") to institute an *inter partes* review of claims 1–3 and 5 of Patent No. US 6,700,551 B2 (Ex. 1001, "the '551 patent") pursuant to 35 U.S.C. §§ 311–319. Pet. 1. NFC Technology, LLC ("Patent Owner") filed a Preliminary Response. Paper 9 ("Prelim. Resp."). On February 4, 2015, we issued a Decision on Institution (Paper 10, "Dec. on Inst."), instituting *inter partes* review of claims 1–3 and 5 of the '551 patent ("the challenged claims"). Dec. on Inst. 17–18. Subsequent to institution, Patent Owner filed a Patent Owner Response (Paper 18, "PO Resp."), Petitioner filed a Reply (Paper 42, "Pet. Reply") thereto, and Patent Owner filed a Sur-Reply (Paper 50, "PO Sur-Reply"). Further, Patent Owner filed a Motion for Observations on Cross-Examination of Petitioner's declarant, Dr. Emmanouil Tentzeris (Paper 47), and Petitioner filed a Response to Patent Owner's Motion for Observations (Paper 52).

The parties requested an oral hearing (Paper 46; Paper 48) and appeared before us on December 18, 2015. The record includes a transcript of the oral hearing. Paper 55 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6(c). This Final Written Decision, issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73, addresses issues and evidence raised during the *inter partes* review. For the reasons that follow, Petitioner demonstrates by a preponderance of the evidence that claims 1–3 and 5 of the '551 patent are unpatentable.

B. Related Proceedings

Petitioner indicates that the '551 patent is the subject of the following co-pending U.S. district court case: *NFC Technology LLC v. HTC Corp.*, No. 2:13-cv-1058 (E.D. Tex.), filed December 5, 2013. Pet. 1. In addition, at the request of Petitioner, we instituted an *inter partes* review, IPR2014-01199, with respect to a related patent, Patent No. US 7,665,664 B2, against Patent Owner. *HTC Corp. v. NFC Tech., LLC*, Case IPR2014-01199, slip op. at 3, 17 (PTAB Feb. 4, 2015) (Paper 10).

C. The '551 Patent

The '551 patent generally relates to methods and apparatus designed to wirelessly exchange data through inductive coupling, e.g., by radio-frequency identification ("RFID") devices. Ex. 1001, col. 1, ll. 9–18. In particular, the '551 patent relates to "portable electronic objects comprising a contactless integrated circuit, such as contactless smart card readers, electronic label scanners, electronic badge scanners," and the like. *Id*. at col. 1, ll. 15–18. Specifically, "one object of the present invention is to provide a data transmission device of the type described above that can modulate the antenna signal with a modulation depth of less than 100% while being simple in structure and inexpensive to produce." *Id.* at col. 1, ll. 61–65.

Figure 3 of the ’551 patent is reproduced below:

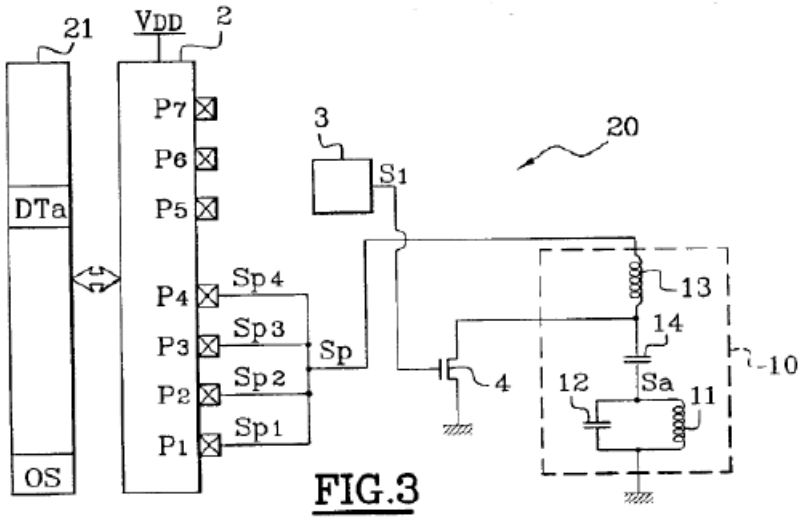

FIG.3

Figure 3 depicts an embodiment of the invention, in which microprocessor 2 employs a plurality of binary ports P1–P4 to produce the modulated antenna signal. *See id.* at col. 5, ll. 34–37. As explained in the Specification, “microprocessor 2 comprises binary ports P1 to P7 that can be set to ‘1’ (voltage VDD), to ‘0’ (output of the port to the ground) or to high impedance state.” *Id.* at col. 3, ll. 32–34. In the embodiment of Figure 3, selected binary ports, e.g., ports P1–P4, are used to “deliver a power supply signal Sp which is the combination of signals Sp1, Sp2, Sp3, Sp4 delivered by each of the ports, and which is applied to the antenna circuit 10 by means of the inductor 13 and the capacitor 14 described above.” *Id.* at col. 3, ll. 43–46. In the depicted embodiment, “the modulation of the antenna signal Sa is obtained by setting all the ports P1 to P4 to 0 or by setting certain ports to high impedance while the other ports are maintained on 1.” *Id.* at col. 4, ll. 21–24. Thus, “setting all the ports P1 to P4 to 0” results in “the power supply signal Sp [being] zero and the amplitude of the antenna signal Sa [being] modulated at 100% (standard ISO/A).” *Id.* at col. 4, ll. 21–

26. Modulation of the amplitude of antenna signal Sa at less than 100% may be achieved by "setting certain ports to high impedance while the other ports are maintained on 1" in order to permit "a more substantial current [to] pass[] through the ports maintained on 1 and their internal resistor Ri [to] cause[] the voltage of the power supply signal Sp to drop without cancelling it." *Id.* at col. 4, ll. 21–31. Modulation switch 4 "is controlled by the signal S1 and does not receive an amplitude modulation signal delivered by the microprocessor, as was the case in previous practices." *Id.* at col. 3, ll. 49–52; *cf. id.* at Figs. 1, 2.

Although the embodiment of Figure 3 employs microprocessor 2, any type of control circuit providing features, such as those described above, may be used to achieve the disclosed methods and apparatus. *Id.* at col. 5, ll. 34–37. In particular, the '551 patent explains that the modulation may be controlled by binary ports that are a part of many off-the-shelf chips and are "simple in structure and inexpensive to produce." *Id.* at col. 1, ll. 64–65. Suitable integrated circuits "can include a microprocessor or a programmable logic circuit comprising 'port' type switch lines with a structure that is equivalent to that of a microprocessor port." *Id.* at col. 5, ll. 39–43.

D. Illustrative Claim

Petitioner challenges method claims 1–3 and apparatus claim 5 of the '551 patent. Pet. 3. Claim 1 is independent. Ex. 1001, col. 7, ll. 16–29. Each of claims 2, 3, and 5 depends directly from claim 1. Claim 1 of the '551 patent is illustrative of the claims at issue and is reproduced below:

> 1. Method for modulating the amplitude of the antenna signal of an inductive antenna circuit comprising a coil, by means of a control circuit comprising *binary ports that can be*

> *set to high impedance state* and with a non-zero internal resistor, characterised [sic] *in that the antenna circuit is electrically powered by at least two ports of the control circuit*, and in that it comprises steps of:
>
> setting the ports providing the electric supply of the antenna circuit to "1", to supply the antenna circuit at full power level, and
>
> *changing the state of at least one of the ports* providing the electric supply of the antenna circuit, to modulate the amplitude of the antenna signal.

Ex. 1001, col. 7, ll. 16–28 (emphases added).

E. Relied Upon References, Document, and Declarations

Petitioner relies upon the following references, document, and declaration in challenging the identified claims of the '551 patent:

Exhibit No.	References, Document, and Declaration
1002	Prosecution File History for the '551 Patent (U.S. Patent Application No. 09/962,889)
1003	Declaration of Dr. Emmanouil Tentzeris
1004	Patent No. US 6,122,492 to Sears ("Sears")
1005	Patent No. US 5,399,925 to Nguyen ("Nguyen")
1031	Rebuttal Declaration of Dr. Emmanouil Tentzeris

F. Grounds Under Review

Petitioner asserts that the challenged claims are unpatentable under 35 U.S.C. § 103(a) on the following specific grounds (Pet. 3–4, 11–60):

Ground	Reference(s)	Challenged Claims
35 U.S.C. § 103(a)	Sears	1–3 and 5
35 U.S.C. § 103(a)	Sears and Nguyen	1–3 and 5

II. ANALYSIS

A. Claim Construction

Consistent with the statute and the legislative history of the America Invents Act ("AIA"), we interpret claims of an unexpired patent using the broadest reasonable construction in light of the specification of the patent. Pet. 8; *see Office Patent Trial Practice Guide*, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012) (*Claim Construction*); 37 C.F.R. § 42.100(b).[1] Under the broadest reasonable construction standard, a claim term is presumed to have an ordinary and customary meaning as would have been understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). A patentee may act as his or her own lexicographer by providing a special definition for a claim term in the specification with "reasonable clarity, deliberateness, and precision." *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). Generally, in the absence of such a special definition or other considerations, "limitations are not to be read into the claims from the specification." *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

1. Confirmation of Previous Constructions

In its Petition, Petitioner proposed constructions for the following claim terms: (1) "binary ports that can be set to high impedance states" (Claim 1), (2) "high impedance state" (Claim 3), (3) "non-zero internal resistor" (Claim 1), (4) "full power level" (Claim 1), and (5) "100%

[1] *In re Cuozzo Speed Techs. LLC*, 793 F.3d 1268, 1277 ("Congress implicitly approved the broadest reasonable interpretation standard in enacting the AIA"), 1279 ("the standard was properly adopted by PTO regulation.") (Fed. Cir. 2015), *cert. granted sub nom. Cuozzo Speed Techs. LLC v. Lee*, 84 U.S.L.W. 3218 (Jan. 15, 2016) (No. 15-446).

modulation" (Claim 2). Pet. 9–11. We construed each of these terms for purposes of our Decision on Institution. Dec. on Inst. 6–10. Patent Owner does not contest those constructions in its Patent Owner Response. PO Resp. 8; *see* Paper 11, 2–3 ("The patent owner is cautioned that any arguments for patentability not raised in the response will be deemed waived."). Consequently, we now confirm our constructions of those claim terms, as follows:

a. "binary ports that can be set to high impedance state" (Claim 1)

"binary ports that can be set to high impedance state" means "a port or other portion of a circuit that can be set to binary logic '1,' binary logic '0,' or high impedance state" (Dec. on Inst. 8);

b. "high impedance state" (Claim 3)

"high impedance state" means "a state of a portion of a circuit when the portion is not driven to either the '0' (connection to ground) or '1' (connection to Vdd) states and the resistance of the port approaches or equals that of an open-circuit state" (*id.* at 9);

c. "non-zero internal resistor" (Claim 1)

"non-zero internal resistor" means "a component in the portion of the circuit that has a resistance above zero" (*id.* at 9–10);

d. "full power level" (Claim 1)

"full power level" means "setting the ports providing the electric supply of the antenna circuit to '1' to supply the antenna circuit at full power level" (*id.* at 10–11); and

e. "100% modulation" (Claim 3)

"100% modulation" means "reduction of the amplitude of the antenna signal from its maximum value nominally to zero" (*id*. at 11).

2. Additional Constructions Proposed in Patent Owner Response

In the Patent Owner Response, Patent Owner proposes constructions for additional terms: (1) "setting the ports providing the electric supply of the antenna circuit to '1'" (Claim 1) and (2) "set to '0'" (Claim 2). PO Resp. 8–9. In particular, Patent Owner contends that "a person of ordinary skill in the art would understand that setting to '1' or '0' means placing the port into one of two states (Ex. 2027, Apsel Dec., ¶ 36.)" PO Resp. 9. Petitioner argues that Patent Owner's proposed constructions improperly seek to incorporate a "setting individual ports" requirement into claim 1. Pet. Reply 3.

Claim 1 recites that "the antenna circuit is electrically powered by *at least two ports* of the control circuit" and the step of "*setting the ports* providing the electric supply of the antenna circuit *to '1'*." Ex. 1001, col. 7, ll. 20–25 (emphases added). Similarly, claim 2 recites "*the ports* providing the electric power supply of the antenna circuit *are set to '0'*." *Id.* at col. 7, ll. 29–31 (emphases added). We agree with Petitioner that the meaning of this claim language is that the "at least two ports" supplying electric power to the antenna circuit are both (or all) set to "1" or "0." While the steps of claims 1 and 2 may permit individually setting the ports (Ex. 2027 ¶ 36), the claim language makes clear that, in order to satisfy the claim language, all of the "at least two ports" supplying electric power of the antenna circuit must be *set* to "1" or "0."

Further, claim 1 recites the step of "changing the state of *at least one of the ports* providing the electric supply of the antenna circuit, to modulate the amplitude of the antenna signal." Ex. 1001, col. 7, ll. 26–28 (emphasis added). Thus, the claim terms considered in the context of the language of

claim 1, as a whole, make clear that the "setting" step applies to the "at least *two* ports" and the "changing" step applies to "at least *one* of the ports." (Emphases added).

"In claim construction, [the Federal Circuit] gives primacy to the language of the claims, followed by the specification." *Tempo Lighting Inc. v. Tivoli LLC*, 742 F.3d 973, 977 (Fed. Cir. 2014) (citing *In re Morris*, 127 F.3d 1048, 1056 (Fed. Cir. 1997)). The Specification of the '551 patent makes clear that "this 100% modulation is 'obtained by *simultaneously* setting ports P1 to P4 to 0 (signals SP1 to SP4 to 0).'" PO Resp. 8 (quoting Ex. 1001, col. 5, ll. 5–8); *see also* Ex. 1001, col. 3, ll. 54–57 ("According to the method of the present invention, *the four ports P1 to P4 are maintained on state '1'* (voltage VDD present on the ports) to supply the antenna circuit 10 at full power level" (emphasis added)).

Therefore, the broadest reasonable interpretation of the term "setting the ports providing the electric supply of the antenna circuit to '1'" (Claim 1) is "setting two or more of the at least two ports supplying electric power to the antenna circuit to '1'" and of the term "set to '0'" (Claim 2) is to "set two or more of the at least two ports supplying electric power to the antenna circuit to '0'."[2] *See* Ex. 1031 ¶ 36.

3. Other Claim Terms

Neither party offers constructions of other terms in the challenged claims. *See* Pet. 9–11; PO Resp. 8–9. Only terms that are in controversy in

[2] Patent Owner does not base its constructions in the prosecution history of the '551 patent (*see* Ex. 1002), but does rely on a declarant's testimony as to the meaning of these terms to a person of skill in the art (Ex. 2027). On this record, the construction of these terms would not differ under the *Phillips* standard. *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

this proceeding 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). Therefore, no other claim terms require express construction.

B. Antedating Sears

Petitioner argues that claims 1–3 and 5 of the '551 patent would have been rendered obvious over Sears and over Sears and Nguyen. Pet. 3. We instituted *inter partes* review on those grounds. *See supra* Section I.F; Dec. on Inst. 17–18. Initially, Patent Owner contends that Sears does not constitute prior art under 35 U.S.C. § 102(e), as Petitioner alleges. PO Resp. 9; *see* Pet. 3. For the reasons set forth below, we are not persuaded that the inventor's testimony is corroborated adequately, and we determine that Patent Owner has not met its burden of producing sufficient evidence that the subject matter of the challenged claims was invented prior to February 8, 1999, the filing date of Sears.

1. Background

a. Patent Owner's Contentions

As noted above, Patent Owner contends that Sears does not constitute prior art to the challenged claims of the '551 patent under 35 U.S.C. § 102(e), as Petitioner alleges. PO Resp. 9–34. The French patent application, from which the '551 patent claims the benefit, was filed on March 25, 1999 (*id.* at 1–2; Pet. 3; Ex. 1001, (30) (63)); and the U.S. patent application that eventually issued as Sears was filed on February 8, 1999 (PO Resp. 9; Pet. 3; Ex. 1004, (22)). Patent Owner contends that the subject matter recited in the challenged claims of the '551 patent was "actually reduced to practice on or before November 1998," i.e., before February 8,

1999. PO Resp. 9. In support of this contention, Patent Owner provides declarations of: the sole named inventor, Bruno Charrat, Chief Operating Officer at b-pack (Ex. 2023); as well as André Marchand, a patent attorney at Omnipat in Aix-en-Provence, France (Ex. 2024); and Francois Lepron, an engineer at INSIDE Technologies ("INSIDE") at the time of the alleged actual reduction of the subject matter of the challenged claims to practice (Ex. 2025 (expunged)). Although Mr. Lepron executed a declaration in support of Patent Owner's contentions regarding the actual reduction to practice of the recited subject matter, Mr. Lepron refused "for personal reasons" to be deposed by Petitioner. Ex. 1023 (English translation of e-mail from Mr. Lepron to Murielle Greusard, France Brevets). Consequently, we authorized Petitioner to file a Motion to Strike Mr. Lepron's declaration (Paper 38), which Petitioner did (Paper 39), and, after considering Patent Owner's Opposition to the Motion to Strike (Paper 40), granted Petitioner's Motion (Paper 41) and expunged Mr. Lepron's declaration (Ex. 2025). *See* Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,761 (Aug. 14, 2012); 37 C.F.R. §§ 41.51(b), 42.53(g). As a result, Mr. Lepron's declaration is no longer part of the record in this proceeding, and "to the extent that Patent Owner relies on Exhibit 2025, wholly or in part, as evidence to support argument in the Patent Owner Response, we give no weight to that reliance on expunged Exhibit 2025." Paper 41, 5.

i. Conception by Mr. Charrat

Patent Owner contends that Mr. Charrat conceived of the subject matter recited in the challenged claims on or before September 10, 1998. PO Resp. 16. Specifically, Patent Owner contends that, in mid-1998,

"*engineers* at a company called INSIDE Technologies (later renamed INSIDE Contactless and then renamed as INSIDE Secure) began work on what the company called M210H."[3] *Id.* at 11–12 (emphasis added). This device was to be "compatible with both of the ISO/A and ISO/B standards, yet having fewer components than the previous INSIDE devices." *Id.* at 12. In particular, the ISO/A standard requires the modulation of a transmission signal by 100%, and the ISO/B standard requires the modulation of a transmission signal by only 10%. *Id.* (citing Ex. 2026, 4, 8). The M210H was required to operate in accordance with either standard. *Id.* (citing Ex. 2023 ¶ 23).

According to Patent Owner,

> Mr. Charrat provided that solution in September of 1998 when he conceived of using available tri-state binary ports of an off-the-shelf microprocessor to achieve the variable modulation. ([Ex. 2023] ¶¶ 25–26.) Specifically, by September 10, Mr. Charrat had fully worked out how to implement the design of the M210H using only available microprocessor ports (as opposed to a separate modulation circuit) to modulate the carrier signal. (*Id.* at ¶ 34.) Indeed, he had already begun the process of implementing the device as hand-drawn layouts in his notebook at that time show.

PO Resp. 13.

In support of its contention that Mr. Charrat conceived of the recited subject matter of the challenged claims, Patent Owner relies primarily on

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[3] Patent Owner contends that "[a]ll of the development of the M210H device occurred in Aix-en-Provence, France, which is a WTO country. Accordingly, the inventor is entitled to the same priority rights 'as if such invention had been made in the United States.'" PO Resp. 12 n.2 (quoting 35 U.S.C. § 104(a)(C)(2) (pre-AIA)). Petitioner does not contest the contention.

two pieces of evidence, in addition to Mr. Charrat's testimony (Ex. 2023). First, Patent Owner relies on excerpts from Mr. Charrat's laboratory notebook. PO Resp. 13–14 (reproducing Figure 3 of Ex. 2006). Although some of the laboratory notebook pages are dated, the laboratory notebooks are neither signed by Mr. Charrat nor witnessed by another person. Tr. 39:20–40:7 ("The notebooks are not signed by anyone. These are not notebooks that are maintained in the same sense as an inventor's lab notebook would be maintained in accordance with United States law."); *see id.* at 49:14–20. Moreover, the notebook excerpts reproduced in Exhibits 2004–2006 do not appear to be the original notebooks' pages, but, instead, appear to be reproductions of pages annotated by Patent Owner to include certified translations of the French text from the notebooks. *E.g.*, Ex. 2004, 4 (certification of translation); *see* Ex. 2030 ¶ 2. Second, Patent Owner relies on "a high-level block diagram of the M210H showing a processor directly connected to an emitter, which is itself connected to an antenna." PO Resp. 15 (citing Ex. 2001, Fig. 4). Patent Owner contends that "Mr. Charrat began his efforts to design the M210H project on or before June 26, 1998, when he drafted an initial project data sheet memorializing the requirements of the M210H device. (*See*, Ex. 2001, p. 2.)" PO Resp. 14.

> Referring to Exhibit 2001, Mr. Charrat testifies that
>
> This project to develop a microcontroller-based modulation (the project that would ultimately be described in the '551 patent) began on or before June 26, 1998, when *I produced* an initial project data sheet detailing the requirements for a project that was, at the time, called Readcrypt M210H. A subsequent version of this document dated July 21, 2007,[4] is attached as Ex. 2001 and details various features of the M210H project.

[4] Mr. Charrat testifies that data sheet that "evolved" into Exhibit 2001,

Ex. 2023 ¶ 28 (emphasis added). There is no author named on this datasheet (Ex. 2001), and only Patent Owner's argument and Mr. Charrat's own testimony asserts that Mr. Charrat is the author of the data sheet.

After the initial data sheet for the M210H device was prepared on June 28, 1998, Patent Owner contends that

> Mr. Charrat *and others* generated a product development request (PDR). Like the data sheet, the PDR outlined general requirements for the M210H device, which included a requirement for compatibility with both the ISO/A and ISO/B standards. (Ex. 2023, Charrat Dec., ¶ 30; Ex. 2002.) Another contemporaneous internal document *from INSIDE* also lays out the requirement that the M210H low-cost reader would need to "read ISO A & B chips." ([Ex. 2023] ¶ 31; Ex. 2003, p. 5.)

PO Resp. 15–16 (emphases added). Neither Patent Owner nor Mr. Charrat contends that Mr. Charrat alone produced either Exhibit 2002 or Exhibit 2003, and again neither exhibit identifies its author. Nevertheless, Mr. Charrat testifies that, after the requirements for the M210H device had been identified, he continued to work on the design of the device, and "[b]y September 10, 1998, [he] had fully conceived of the idea of using a PIC16C63 microprocessor to power and control the modulation of the antenna." PO Resp. 16 (citing Ex. 2023 ¶ 34).

ii. Actual Reduction to Practice by the INSIDE Team

After the design for the M210H device had been created, Patent Owner contends that Mr. Charrat worked with his development team at INSIDE, consisting of Mr. Charrat, Mr. Lepron, Alban de Moncuit, and

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which originally was created on July 21, 1998, but that Exhibit 2001 is properly dated "July 21, 2007," more than eight (8) years after Sears's filing date. Ex. 2023 ¶ 28 n.3.

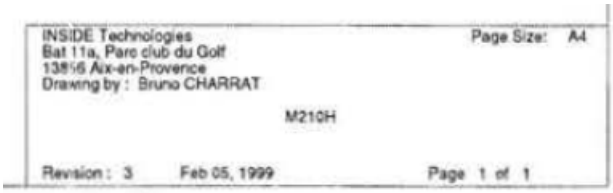
Rodrigue Gil, to construct a working prototype. *Id.* (citing Ex. 2023 ¶ 13). In September of 1998, Mr. Charrat contends that the development of the M210H device was sufficient, such that "INSIDE commissioned a company called Concept Electronique to generate printed circuit board (PCB) layouts for the prototype M210H device. (Ex. 2023, Charrat Dec., ¶¶ 36–38.) Concept Electronique generated the PCB layout and sent it to INSIDE for approval." PO Resp. 17. The PCB layouts *generated by Concept Electronique* are depicted in Exhibit 2007. *See* PO Resp. 17–18 (reproducing figures from Ex. 2007, 4–9).

Patent Owner contends that, on September 10, 1998, Mr. Charrat instructed Concept Electronique to fabricate a prototype of the M210H device. Ex. 2009 (return of facsimile cover sheet stating "OK FAB" signed by Mr. Charrat and dated "10/09/98"); *see* Tr. 33:20–34:6. Patent Owner acknowledges, however, that it does not have direct evidence showing what the INSIDE team of engineers sent to Concept Electronique or what was contained in the four (4) pages Concept Electronique sent to the INSIDE team as an attachment to the facsimile cover sheet. *See* Tr. 34:7–13.

Nevertheless, Patent Owner contends that the prototype, which was fabricated by Concept Electronique, was tested by the INSIDE team and performed according to the recited limitations of the challenged claims. PO Resp. 19–21. In November of 1998, Mr. de Moncuit allegedly prepared a report (Ex. 2012) indicating that the Concept Electronique prototype device was capable of both 100% modulation and 10% modulation and "worked for its intended purpose of being compatible with both the ISO/A and ISO/B standards." *Id.* at 20–21 (citing Ex. 2023 ¶ 45); *see* Ex. 2012, 7 (depicting

test results for 100% modulation), 8 (depicting test results for 10% modulation). Exhibit 2012 does not name its author.

Although Exhibits 2007 and 2009 refer to the "M210H" device (Ex. 2007, 1–3, 6, 8–12; Ex. 2009, 1, 3) and Patent Owner contends that this reference to the "M210H" device links these two documents (Tr. 35:14–36:20), Exhibit 2012 refers to the "M210H-2" device, rather than the "M210H" device (Ex. 2012, 3; *see* Tr. 22:17–23:10). During his deposition, Mr. Charrat was unable to explain what the "M210H-2" device was or how it differed from the "M210H" device. Ex. 1026, 32:17–33:3; *see* Tr. 48:13–24. Further, Patent Owner contends that the INSIDE team verified that the Concept Electronique prototype conformed to their design. PO Resp. 21–22 (reproducing the highlighted wiring diagram of Ex. 2013). The legend of Exhibit 2013 is reproduced below:



Ex. 2013, 1. As shown in the reproduced portion, Exhibit 2013 is identified as "Revision: 3" and is dated "Feb 05, 1999," over two months *after* Mr. de Moncuit prepared his report on the M210H-2 device manufactured by Concept Electronique. *Id.*; *see* Ex. 2012, 1.

Patent Owner contends that, on January 15, 1999, Mr. Charrat met with his attorney, Mr. Marchand, to discuss the preparation of a patent application claiming the invention corresponding to the Concept Electronique prototype. PO Resp. 22–26. Mr. Marchand testifies that

> Mr. Charrat explained to me that *the M210H device* operated at 13.56 MHz using a large coil (i.e., inductive antenna) connected to the reader. (Ex. 2015, p. 1.) Furthermore, *Mr. Charrat's*

> *prototype device* used a commercially available microcontroller (i.e., the PIC16C63 in this case) to power the antenna. (Ex. 2016, p. 1.) Additionally, my notes (Ex. 2015) reflect that Mr. Charrat explained to me that the device connected multiple ports (5 indicated in these notes), which allowed the transmitter to employ either of the ISO/A (100% modulation) or the ISO/B (i.e., 10% modulation) standards. (*Id.*, p. 4.)

Ex. 2024 ¶ 8 (emphases added); *see* Ex. 1032 ¶¶ 3, 4. In particular, Patent Owner contends that,

> [o]n February 24, 1999, Mr. Marchand sent Mr. Charrat a first draft of the patent application *containing the description of the M210H prototype device*. . . . After some minor corrections to the first draft, a second draft was sent to Mr. Charrat and the application was filed on March 25, 1999. . . . This application *described the M210H prototype that Mr. Charrat had designed, built, and tested in November 1998*.

PO Resp. 25–26 (emphases added) (citing Ex. 2023 ¶¶ 55–57; Ex. 2024 ¶¶ 11, 13–15). Thus, Mr. Marchand drafted an application based on Mr. Charrat's description of the Concept Electronique prototype that allegedly embodies Mr. Charrat's invention, as described to Mr. Marchand, but Mr. Marchand admitted that he has no personal knowledge that the described prototype had been made or tested. Ex. 1024, 26:25–27:14.

Finally, Patent Owner contends that the Concept Electronique prototype satisfies all of the limitations of claims 1–3 and 5 of the '551 patent. PO Resp. 26–33. Accordingly, in view of the arguments and evidence presented in Patent Owner's Response (*id.* at 11–34), Patent Owner contends that it has met "its burden, under at least a preponderance of the evidence, to show an actual reduction to practice of the claimed subject matter prior to the effective prior art date of the Sears reference" (*id.* at 34).

b. Petitioner's Reply

Petitioner responds that Patent Owner's evidence allegedly showing the fabrication, testing, and verification of the Concept Electronique prototype "lack[s] independent corroboration because they are authenticated and corroborated solely by the inventor himself." Pet. Reply 10–12. In particular, Petitioner argues that the evidence that Patent Owner primarily relies upon in support of its contentions, namely, the PCB Layout, generated by Concept Electronique (Ex. 2007); the facsimile cover sheet, dated September 10, 1998 (Ex. 2009); and the test report, prepared by Mr. de Moncuit and dated November 1998 (Ex. 2012), are corroborated *only* by Mr. Charrat's testimony. *See* Pet. Reply 11–12. Moreover, the other evidence that Patent Owner relies upon in support of its contentions, namely, materials produced by INSIDE personnel (Exs. 2001–2003) and excerpts from Mr. Charrat's notebooks (Exs. 2004–2006, 2010, and 2011) also are corroborated *only* by Mr. Charrat's testimony. Pet. Reply 12–13. Further, Petitioner argues that the documents created by Mr. Marchand or his staff in connection with the preparation of the French patent application, from which the '551 patent claims priority, (Exs. 2015–2022) are not properly corroborated because of Mr. Marchand's alleged bias. Pet. Reply 13–14.

> In addition, Petitioner argues that the Concept Electronique prototype did not work for its intended purpose because: (1) no software necessary to perform ISO/A and B modulations had been developed at the time of the Nov. 98 Tests (Ex. 1031, ¶¶120–127); (2) the hardware tested in the Nov. 98 Tests was incapable of performing these modulations (*id*. at ¶¶110–115); and (3) the two separate tests PO cites from the Nov. 98 Tests, at best, tested two different devices and not a single fabricated device (*id*. at ¶79). Because the M210H Prototype did not work,

> it lacked a processor capable of powering an antenna and modulating antenna signals, as required by claims 1-3 and 5.

Pet. Reply 14. In particular, Petitioner argues that software was necessary for the prototype to operate according to its intended purpose (Ex. 1026, 17:12–18:9), but that Mr. Lepron, the engineer tasked with developing that software (Ex. 1026, 11:22–24), did not work on the project between September and November of 1998, during which time the prototype was fabricated. Pet. Reply 14–16 (citing Ex. 1031 ¶¶ 120–122, 124). Further, Petitioner argues that, because harmonic noise also was introduced into the prototype by its transistor 2N7002, the Concept Electronique prototype failed to operate for its intended purpose. *Id.* at 16–20. Specifically, the level of noise generated in the prototype was too high to permit the recited modulation levels. *Id.* at 17. Finally, Petitioner argues that the tests described in Exhibit 2012 rely on two separate wiring configurations and thus do not support Patent Owner's claim that the subject matter of the challenged claims was actually reduced to practice. *Id.* at 20–22. In particular, Petitioner argues that

> [i]n one test, the 'transmitter is supplied by **4-micro-controller ports**.' Ex. 2012, 7 (emphasis added); Ex. 1031, ¶79. In the second test, only 3 ports are used with respect to the transmitter. [Ex. 2012], 8; Ex. 1031, ¶ 79. The 4th port of the 3-port test is entirely unaccounted for.

Pet. Reply 20–21.

Petitioner argues that Patent Owner's evidence is contradictory and cannot support its contention that the subject matter of the challenged claims was actually reduced to practice before the filing date of Sears. *Id.* at 22–25. Because Patent Owner relies solely on actual reduction to practice to antedate Sears, Petitioner argues that Patent Owner has failed to meet its

burden and urges that "the Board should not and need not address any factors relating to conception or diligence." Pet. Reply 25 (citing *Scott v. Finney*, 34 F. 3d 1058, 1060 (Fed. Cir. 1994) (only addressing actual reduction to practice because PO opted to argue it)).

c. Patent Owner's Sur-Reply

Because Patent Owner bears the burden of production regarding evidence supporting the antedating of Sears, we granted Patent Owner's request to file a Sur-Reply limited to the question of antedating. Paper 45, 3–5. Patent Owner contends that Petitioner's arguments challenging Patent Owner's efforts to antedate Sears are flawed for three reasons. PO Sur-Reply 1. First, Patent Owner contends Petitioner's "lack-of-corroboration arguments are legally flawed because they conflate authentication with corroboration." *Id.* at 1–3. In particular, Patent Owner contends that "'[c]orroboration' deals with *sufficiency* of the evidence, while 'authentication' deals [with] its admissibility." *Id.* at 1 (emphasis added). Further, lack of authentication is an evidentiary issue properly addressed by a motion to exclude evidence. *Id.* at 3. Thus, Patent Owner contends that Mr. Charrat's testimony is sufficiently and independently corroborated by other pieces of documentary evidence. *Id.* at 3; *but see In re NTP, Inc.*, 654 F.3d 1279, 1293 (Fed. Cir. 2011) (rejecting the "circular logic of using the files to corroborate the testimony and the testimony to corroborate the files").

Second, Patent Owner contends that Petitioner overstates what is legally required to show actual reduction to practice. *Id.* at 4–5. In particular, Patent Owner contends that, in order to show actual reduction to practice, Patent Owner "need only show that [the] invention has been

sufficiently tested to demonstrate that it will work for its intended purpose, but it need not be in a commercially satisfactory stage of development." *Id.* at 4; *see Scott*, 34 F.3d at 1062. Thus, the presence of "harmonic noise" or other minor deficiencies in the prototype are not sufficient to prevent the prototype from showing actual reduction to practice. *Id.* at 4–5 (citing Ex. 2023 ¶¶ 44, 45); *see* Pet. Reply 17.

Third, Patent Owner contends that Petitioner's rebuttal "evidence" improperly relies on its declarant's, Dr. Tentzeris's, factual testimony; but Patent Owner contends that Dr. Tentzeris has no personal knowledge of the facts surrounding the actual reduction to practice of Mr. Charrat's purported invention. *Id.* at 5; *see* Paper 47, 1–6.[5] Thus, Patent Owner contends that Dr. Tentzeris's testimony regarding the facts surrounding the actual reduction to practice of the subject matter of the challenged claims should be given little or no weight. *Id.*

2. Discussion

Petitioner bears the burden of persuasion, by a preponderance of the evidence, that the challenged claims are unpatentable. 35 U.S.C. § 316(e). Petitioner has proffered Sears, which presumptively constitutes prior art under 35 U.S.C. § 102(e) because it was filed in the U.S. Patent and Trademark Office on February 8, 1999, *before* the filing date, i.e., March 25, 1999, of the French parent application of the '551 patent. This difference in dates gives rise to Patent Owner's burden to produce evidence supporting a

[5] We do not rely on Dr. Tentzeris's testimony regarding Exhibits 2007, 2009, and 2012, and regarding INSIDE Technologies in our analysis of Patent Owner's contentions with respect to the antedating of Sears. *See* Paper 47; Paper 52.

date of invention before the Sears's filing date, i.e., before February 8, 1999. *See Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1576–77 (Fed. Cir. 1996).

"To antedate . . . an invention, a party must show either an earlier reduction to practice, *or* an earlier conception followed by a diligent reduction to practice." *Purdue Pharma L.P. v. Boehringer Ingelheim GMBH*, 237 F.3d 1359, 1365 (Fed. Cir. 2001) (emphasis added, internal citation omitted). Patent Owner's position is based on the first of these options, i.e., that it was the first actually to reduce the invention to practice, rather than the first to conceive plus diligent reduction to practice. PO Resp. 9; PO Sur-Reply 4–5.

A party seeking to establish an actual reduction to practice must satisfy a two-prong test: (1) the party must construct an embodiment or perform a process that satisfies every element of the claim at issue, and (2) the embodiment or process must operate for its intended purpose. *See Eaton v. Evans*, 204 F.3d 1094, 1097 (Fed. Cir. 2000). Moreover, in order to demonstrate an actual reduction to practice, the constructed embodiment must have been tested sufficiently to demonstrate that it will work for its intended purpose, but it need not be in a commercially satisfactory stage of development. *See, e.g.*, *Scott*, 34 F.3d at 1062; *see also Wells v. Fremont*, 177 USPQ 22, 24–25 (BPAI 1972) ("[E]ven where tests are conducted under 'bench' or laboratory conditions, those conditions must 'fully duplicate each and every condition of actual use' or if they do not, then the evidence must establish a relationship between the subject matter, the test condition and the intended functional setting of the invention," but it is not necessary that all the conditions of actual use are duplicated.). Further, an actual reduction to practice can be done by another on behalf of the inventor. *De Solms v.*

Schoenwald, 15 USPQ2d 1507, 1510 (BPAI 1990). Here, it is undisputed that Concept Electronique, rather than the named inventor, Mr. Charrat, fabricated the prototype, on which Patent Owner relies to establish actual reduction to practice. PO Resp. 17–18. Assuming initially, without deciding, that the prototype embodies the subject matter of the challenged claims, the issue is whether Patent Owner has sufficiently shown that the Concept Electronique-built prototype inures to Patent Owner's benefit. We determine that Patent Owner has not.

If a person conceives of an invention and proceeds himself or herself actually to reduce that invention to practice, the actual reduction to practice is sufficient evidence of conception, at least as of the date that the actual reduction to practice is completed. Here, Patent Owner contends that Concept Electronique's prototype inures to its benefit because acts by others working explicitly or implicitly at an inventor's request may inure to that inventor's benefit. *Cooper v. Goldfarb*, 154 F.3d 1321, 1332 (Fed. Cir. 1998) ("*Cooper I*"). However, when a person relies on the activities of others to show actual reduction to practice, proof of conception is relevant to the inurement analysis. *See Sensio, Inc. v. Select Brands, Inc.*, Case IPR2013-00580, slip op. at 10–15 (PTAB Feb. 9, 2015) (Paper 31); *but see* Tr. 14:11–15:9. Under *Genentech, Inc. v. Chiron Corp.*, 220 F.3d 1345, 1354 (Fed. Cir. 2000), and *Cooper v. Goldfarb*, 240 F.3d 1378, 1383 (Fed. Cir. 2001) ("*Cooper II*")), Patent Owner must show that Mr. Charrat conceived the subject matter of the challenged claims and communicated that subject matter to Concept Electronique in order for the fabricated

prototype to inure to Mr. Charrat's benefit.[6] For example, in *Genentech*, in the context of deciding whether a non-inventor's recognition of the utility of a reduction to practice inured to the inventor's benefit, the Federal Circuit held that the inventor *first* must show that it conceived the invention. *Genentech*, 220 F.3d at 1354.

Conception is complete when the idea is so clearly defined in the inventor's mind that only ordinary skill is necessary to reduce the invention to practice. *Burroughs Wellcome Co. v. Barr Labs., Inc.* 40 F.3d 1223, 1228 (Fed. Cir. 1994). In *Cooper II*, the United States Court of Appeals for the Federal Circuit applied "a modified version of the *Genentech* test" to a different issue, requiring a party to show that it conceived the invention to obtain the benefit of another party's knowledge that a tested material met the limitation of the interference count. *Cooper II*, 240 F.3d at 1385. *Cooper II* demonstrates the Federal Circuit's view that conception must be shown whenever a party seeks the benefit of another party's actual reduction to practice. This requirement makes sense; otherwise, a person could establish that she is the first inventor without showing either that she was the first to conceive or the first to reduce to practice, contrary to the requirements for antedating an invention. *See Purdue Pharma*, 237 F.3d at 1365.

The case on which Patent Owner relies, *Cooper I*, is not to the contrary. PO Resp. 10; PO Sur-Reply 4. In *Cooper I*, the Federal Circuit

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[6] *See also Hoop v. Hoop*, 279 F.3d 1004, 1007 (Fed. Cir. 2002) (in a design-patent interference case, holding that the "'person or persons who *conceived* the patented [design]' . . . *may then* '*use* the services, ideas, and aid of others in the process of perfecting his invention without losing his right to a patent'" (emphases added)). The standard of inventorship is the same for utility and design patents. *Id*.

noted that, under the inurement doctrine, the benefit of actions of a non-inventor only may inure to the person, who did first conceive the invention at issue. *See Cooper I*, 154 F.3d at 1331. In particular, the Federal Circuit explained that "experiments conducted at the request of *an inventor* by another party may inure to the benefit of *the inventor* for purposes of establishing a reduction to practice." *Id*. (emphases added). Nevertheless, Patent Owner contends here that it has presented sufficient evidence to demonstrate that Mr. Charrat conceived the subject matter of the challenged claims before Concept Electronique fabricated its prototype. PO Resp. 14–16; *see* Tr. 28:1–22. For the reasons that follow, we are not persuaded that Patent Owner has shown that Mr. Charrat conceived the subject matter of the challenged claims and, consequently, that the actions of the INSIDE team or Concept Electronique inure to Mr. Charrat's benefit.

Patent Owner has produced insufficient evidence to show that Mr. Charrat conceived the subject matter of the challenged claims prior to November of 1998, the alleged date of the actual reduction to practice of the claimed subject matter. Patent Owner points us to Mr. Charrat's testimony that he designed the M210H device and communicated the design of the M210H device to Concept Electronique for fabrication. PO Resp. 14–18 (citing Ex. 2023 ¶¶ 34–38); *see* PO Sur-Reply 1–2. Specifically, Mr. Charrat testifies that he began the project to develop a microcontroller-based modulation device on or before June 26, 1998, when he produced an initial project data sheet detailing the requirements for a project that was, at the time, called Readcrypt M210H. Ex. 2023 ¶ 28. However, "an inventor's testimony, standing alone, is insufficient to prove conception—some form of

corroboration must be shown." *Price v. Symsek*, 988 F.2d 1187, 1194 (Fed. Cir. 1993) (internal citation omitted).

The corroboration requirement "provides a bright line for . . . the PTO to follow in addressing the difficult issues related to invention dates." *Mahurkar*, 79 F.3d at 1577. In assessing corroboration, a "rule of reason analysis is applied," in which "an evaluation of all pertinent evidence must be made so that a sound determination of the credibility of the inventor's story may be reached." *Id.* (internal quotation marks and citation omitted). However, "[t]he rule of reason . . . does not dispense with the requirement for some evidence of independent corroboration." *Coleman v. Dines*, 754 F.2d 353, 360 (Fed. Cir. 1985); *see* PO Sur-Reply 1 (citing *Medichem S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1170 (Fed. Cir. 2006)).

Patent Owner argues that the evidence of record shows that Concept Electronique fabricated the prototype according to Mr. Charrat's design and at Mr. Charrat's direction, which corroborates the inventor's testimony under the rule of reason. PO Sur-Reply 1–3. We understand that the "evidence of record," to which Patent Owner refers, includes (1) the initial project data sheet memorializing the requirements of the M210H device, drafted by the INSIDE team (Ex. 2001); (2) the PCB Layout, generated by Concept Electronique (Ex. 2007); (3) the facsimile cover sheet, dated September 10, 1998 (Ex. 2009); (4) the test report, prepared by Mr. de Moncuit and dated November 1998 (Ex. 2012); and (5) a highlighted wiring schematic for the Concept Electronique prototype (Ex. 2013). PO Resp. 14–22; PO Sur-Reply 2–3. We have reviewed each of these exhibits and are not persuaded that they corroborate the inventor's testimony regarding conception. In particular, none of these exhibits addresses directly

who conceived the subject matter of the challenged claims and when that person or persons did so.

As noted above, there is no author named on the initial project data sheet (Ex. 2001), and only Mr. Charrat's own testimony asserts that he is the author of the data sheet. PO Resp. 14; Ex. 2023 ¶ 28. Patent Owner acknowledges that the PCB Layout (Ex. 2007) was generated by Concept Electronique, not by Mr. Charrat or by the INSIDE team. PO Resp. 17–18. Although Patent Owner contends that Mr. Charrat conceived the subject matter of the challenged claims, Patent Owner does not produce documents, other than Mr. Charrat's notebooks (e.g., Exs. 2004–2006), which were prepared by Mr. Charrat and allegedly show the subject matter of the challenged claims. As noted above, however, the case law prohibits the "circular logic of using the files to corroborate the testimony and the testimony to corroborate the files." *NTP*, 654 F.3d at 1293.

Further, as Patent Owner acknowledged during the oral hearing, the notebooks are neither signed by Mr. Charrat nor witnessed by any other person. Tr. 39:20–24 ("The notebooks are not signed by anyone."); *see* Exs. 2004–2006. We recognize that Mr. Charrat did not create or maintain these notebooks for the purpose of proving conception in the United States. *See id.* at 39:24–40:7. Nevertheless, we assess the value of these notebooks as corroboration for Mr. Charrat's testimony regarding conception (*see* Ex. 2023 ¶ 28) by U.S. legal standards, and we find that the unsigned and unwitnessed notebooks are insufficient corroborative evidence of conception.

Although Mr. Charrat's testimony and the notebooks he allegedly created may be insufficient evidence to establish conception, independent

circumstantial evidence may supply sufficient corroborating evidence of conception. *See Lacotte v. Thomas*, 758 F.2d 611, 613 (Fed. Cir. 1985); *see also Reese v. Hurst*, 661 F.2d 1222, 1225 (CCPA 1981) ("Independent corroboration may consist of testimony of a witness, other than the inventor, to the actual reduction to practice or it may consist of evidence of surrounding facts and circumstances *independent of information received from the inventor*." (emphasis added)). We are not persuaded that Patent Owner has presented such corroborating evidence here.

Patent Owner contends that the facsimile cover sheet (Ex. 2009), dated September 10, 1998, instructing Concept Electronique to fabricate a prototype is evidence that Mr. Charrat directed the efforts of a third party actually to reduce his design for the device to practice. Tr. 33:20–34:6. Nevertheless, Patent Owner does not produce evidence showing what the INSIDE team of engineers sent to Concept Electronique or the four (4) page document Concept Electronique attached to the facsimile cover sheet (Ex. 2009) that Concept Electronique returned to INSIDE. *See* Tr. 34:7–13. This lack of evidence, combined with the differing identifications of the prototype on Exhibit 2009 ("M210H") and on the post-fabrication test report, Exhibit 2012 ("M210H-2"), place in question what was fabricated and who provided the design used by the fabricators. Moreover, neither Patent Owner nor Mr. Charrat can explain what design the M210H-2 label identifies. Ex. 1026, 32:17–33:3; *see* Tr. 48:13–24. To further complicate matters, the wiring diagram (Ex. 2013) that allegedly was used to confirm the accuracy of the fabrication of the Concept Electronique prototype, was labeled "Revision: 3" and dated February 5, 1999, over two months after the fabrication date of the Concept Electronique prototype and after preparation

of the test report (Ex. 2012) by Mr. de Moncuit, dated "November 1998." Ex. 2013, 1. The gaps and inconsistencies in this evidence renders it insufficient corroborative evidence to demonstrate conception by Mr. Charrat or his direction of the fabrication of the prototype by Concept Electronique embodying subject matter conceived by Mr. Charrat.

Conception aside, we are not persuaded that Patent Owner has provided sufficient evidence to demonstrate that Concept Electronique fabricated a prototype according to a design provided by Mr. Charrat at Mr. Charrat's direction. We note the absence from the record of any evidence of communications between Mr. Charrat or the INSIDE team and Concept Electronique before September 10, 1998, when fabrication of the prototype allegedly began. Patent Owner has not provided any emails, letters, sketches, etc. that communicated the subject matter of the challenged claims *from* Mr. Charrat or the INSIDE team *to* Concept Electronique before Concept Electronique fabricated its prototype. Tr. 33:20–34:13. Nor do we have any testimony from Mr. Charrat or others that provides any specific information regarding the content of communications with Concept Electronique before Concept Electronique fabricated its prototype. *See* Ex. 2023 ¶ 36. Moreover, Mr. Marchand's testimony (Ex. 2024) merely states what Mr. Charrat told him about the invention, so that Mr. Marchand could draft a patent application. Mr. Marchand's testimony recounts conversations that occurred on and after January 19, 1999, and provides no *independent* and *sufficient* corroborative evidence of Mr. Charrat's activities relating to the conception of the subject matter of the challenged claims or relating to his alleged direction of the reduction of that subject matter to practice. *See* Ex. 1025, 47:20–50:9. In *Woodland Trust v. Flowertree*

Nursery, Inc., 148 F.3d 1368 (1998), the Federal Circuit found significant "the absence of any physical record to support the oral evidence," despite the "the ubiquitous paper trail of virtually all commercial activity" that normally exists "in modern times." *Id.* at 1373. As discussed above, the exhibits, on which Patent Owner relies, do not make up for the absence of such evidence.

We agree with Patent Owner that "'[c]orroboration' deals with *sufficiency* of the evidence." PO Sur-Reply 1 (emphasis added). We have considered Patent Owner's evidence, including Mr. Charrat's testimony and the allegedly corroborating exhibits discussed above, both individually and as a whole. While these exhibits may corroborate some aspects of Mr. Charrat's testimony, they do not corroborate Mr. Charrat's statements on which Patent Owner relies, namely, that Mr. Charrat conceived the subject matter of the challenged claims (Ex. 2023 ¶ 28) and communicated his design to Concept Electronique before the product actually was reduced to practice (*id.* ¶ 36). Consequently, we are not persuaded that Mr. Charrat's testimony is corroborated *sufficiently*, and we determine that Patent Owner has not met its burden of producing evidence that the subject matter of the challenged claims was conceived by Mr. Charrat and actually reduced to practice according to Mr. Charrat's design and under Mr. Charrat's direction prior to February 8, 1999, the filing date of Sears. Accordingly, we agree with Petitioner that Sears is prior art to the challenged claims of the '551 patent under 35 U.S.C. § 102(e).

C. Obviousness Challenges

1. Overview

In view of our determination that Sears is prior art to the challenged claims, we now turn to the grounds for unpatentability based on Sears, upon

which we instituted this review, i.e., obviousness over Sears and over Sears and Nguyen. Dec. on Inst. 17–18. 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 skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations.[7] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). On this record, Petitioner demonstrates by a preponderance of the evidence that claims 1–3 and 5 are rendered obvious over Sears and over Sears and Nguyen.

2. Person of Ordinary Skill in the Art

Petitioner's declarant, Dr. Tentzeris, defines a person of ordinary skill in the art as "a person with *at least a master's degree in electrical engineering (or a substantively equivalent degree)*, in addition to two years of experience with systems that use short-range wireless communication, such as radio frequency identification (RFID) systems." Ex. 1003 ¶ 12 (emphasis added); Ex. 1031 ¶ 18; *see also* Pet. 8 (adopting this definition). Patent Owner's declarant, Dr. Alyssa B. Apsel, defines a person of ordinary skill in the art as a person having "at least *a bachelor's degree in electrical*

[7] Patent Owner does not contend in the Patent Owner Response that secondary considerations are present that would render the challenged claims patentable over the applied references. *See* Paper 11, 2–3.

engineering (or an equivalent degree), and two years of experience with short-range wireless communication systems." Ex. 2027 ¶ 13 (emphasis added); *see* PO Resp. 9, 45, 47. The proposed definitions differ primarily in level of academic achievement, with Patent Owner's declarant proposing a *lower* level.

Based on Exhibit 1003 (Attachment A) and Exhibit 2028, both Dr. Tentzeris and Dr. Apsel meet or exceed the requirements for qualification as a person of ordinary skill in the art under either definition. Moreover, neither party challenges the other party's declarant's credentials. Therefore, to the extent necessary, we adopt Dr. Apsel's definition of a person of ordinary skill in the art.

3. Obviousness over Sears

a. Claim 1

Petitioner argues that Sears discloses all of the limitations of challenged claim 1 of the '551 patent (Pet. 11–20), except that Sears teaches that each of its buffers 200A–200F "'is constructed from a [complementary metal-oxide semiconductor] CMOS hex inverter integrated circuit' that drives a load impedance that is either 'a low impedance load, such as the electromagnetic antenna 108B, or a high or infinite impedance load.'" Pet. 16 (quoting Ex. 1004, col. 4, ll. 36–42). Although the '551 patent does not discuss such CMOS hex inverter circuits, Petitioner argues that a person of ordinary skill in the art "would have understood that a tristatable CMOS inverter, as described in Sears, provides output in one of three states: logic 0, logic 1, and high impedance." Pet. 16 (citing Ex. 1003 ¶ 33; Ex. 1005, col. 1, ll. 16–18); *see also* Pet. Reply 4 ("Sears discloses that the buffers (200A-200F) are tri-statable.") (citing Ex. 1005, col. 5, ll. 4–8, col. 6, ll. 39–

46). As evidence of a person of ordinary skill in the art's understanding of CMOS hex inverter circuits, Petitioner cites to the teachings of Nguyen. *Id.* (citing Ex. 1005, Abstract, Fig. 2, col. 1, ll. 16–18); *see* Ex. 1003 ¶¶ 33–34.

Petitioner's mapping of the teachings of Sears onto the limitations of the challenged claims is persuasive. *See* Pet. 11–20; Pet. Reply 3–7. Initially, Petitioner argues that Sears's Figure 1 discloses a method for modulating the amplitude of an antenna signal of an inductive antenna circuit comprising a coil, by means of a control circuit. Pet. 12–15. Specifically, Sears's system, depicted in Figure 1, includes exciter 101 that transmits an "amplitude modulated signal" received by one or more wireless transceivers 102A, 102B. Pet. 13 (citing Ex. 1004, Abstract, col. 3, ll. 4–6, 16–20; Ex. 1003 ¶ 24).

Referring to Sears's Figure 2, Petitioner argues that Sears's exciter 101 includes modulator 104 that modulates the amplitude of a signal provided to power amplifier 106, which uses the amplitude modulated signal to drive antenna 108. Ex. 1004, Abstract; *see* Ex. 1003 ¶ 25. Antenna 108 is part of an inductive antenna circuit that includes a combination of electrostatic antenna 108A and electromagnetic antenna 108B, collectively referred to as "antenna 108." Ex. 1004, col. 3, ll. 22–24; *see* Ex. 1003 ¶ 25. Antenna 108B also includes radiating coil 211. Ex. 1004, col. 3, ll. 57–64; *see* Ex. 1003 ¶ 26; *see also* Pet. 13 (reproducing annotated Figure 2 of Sears). Radiating coil 211 is configured to "radiate RF energy" due to being driven by amplitude-modulated RF drive signal 220, provided to power amplifier 106. Ex. 1004, col. 3, ll. 57–64, col. 6, ll. 24–26; Ex. 1003 ¶ 26. "Because the antenna (108) includes a coil (211) that radiates RF energy, the antenna (108) is part of an inductive antenna circuit." Pet. 14 (citing

Ex. 1003 ¶ 26). Because Sears's amplifier modulates the amplitude of a signal and drives electromagnetic antenna 108B, causing radiating coil 211 to radiate RF energy according to the amplitude-modulated signal, Sears's amplifier modulates the amplitude of the antenna signal of an inductive antenna circuit comprising a coil by means of a control circuit. *Id.* at 14–15 (citing Ex. 1003 ¶ 28).

Further, challenged claim 1 recites that the control circuit comprises binary ports that can be set to high impedance state and with a non-zero internal resistor. Petitioner's mapping of the teachings of Sears's Figure 2 onto these limitations of the challenged claims is persuasive. Pet. 15–17. Referring again to Sears's Figure 2, Petitioner argues that Sears's power amplifier 106 includes a first set of buffers 200A–200F. Pet. 15 (reproducing annotated Figure 2 of Sears); *see* Ex. 1004, col. 3, ll. 44–46; Ex. 1003 ¶ 29. Further, each buffer 200 provides a "square wave" drive signal, resulting in aggregate waveform 503 (*see* Ex. 1004, Fig. 5) from a first set of buffers 200A–200F that drives antenna 108 (*see id.* at col. 4, ll. 19–23). This square-wave drive signal varies from a low level (e.g., zero volts) to a high level (which depends on RF adjustable power supply 399). *Id.* at col. 6, ll. 55–60, Fig. 3; Ex. 1003 ¶ 30; *see* Pet. 15; PO Resp. 36–37. Because power amplifier 106 includes buffers 200A–200F, each of which provides a square-wave output signal, either at a high level or low level, Petitioner argues that Sears's control circuit comprises binary ports. Ex. 1003 ¶¶ 30, 31.

Patent Owner disagrees and contends that Sears discloses power modulation by varying "the duty cycle of the oscillations of the carrier signal sent to power amplifier 106." PO Resp. 40 (citing Ex. 1004, col. 7, ll. 4–6).

Specifically, Patent Owner contends that "[t]his method of modulating the power does not involve 'setting' the buffers to any particular value; it only involves changing the duty cycle of the input they receive." *Id.* (citing Ex. 2027 ¶ 58). Nevertheless, because Sears's Figure 5 depicts a square wave provided by buffers 200A–200F, we are persuaded that Sears teaches a control circuit comprising binary ports or teaching or suggesting binary ports. *See* Ex. 1003 ¶¶ 30, 31.

In addition, Petitioner argues that buffers 200A–200F are "tristatable" because "buffers (200A–200F) are used to yield (1) a high level output, (2) a low level output, or (3) complete disconnection that amounts to a high impedance state." Pet. 16 (citing Ex. 1004, col. 5, ll. 4–8, col. 6, ll. 39–46; Ex. 1003 ¶¶ 32, 33). Moreover, each buffer 200 may be "constructed from a CMOS hex inverter integrated circuit" that drives a load impedance that is either "a low impedance load, such as the electromagnetic antenna 108B, or a high or infinite impedance load." *Id.* at 16 (quoting Ex. 1004, col. 4, ll. 36–42). Petitioner discusses the application of Sears's disclosure of a CMOS hex inverter circuit and why a person of ordinary skill in the art would understand that this circuit teaches the control circuit recited in the challenged claims. Pet. 15–16; *see* Ex. 1003 ¶ 33 ("A [person of ordinary skill in the art] would have understood that a tristatable CMOS inverter, as described in Sears, provides output in one of three states: logic 0, logic 1, and high impedance."). Consequently, we are persuaded that Petitioner has identified sufficiently "the scope and content of the prior art . . . ; differences between the prior art and the claims at issue . . . ; and the level of ordinary skill in the art." *Graham*, 383 U.S. at 17.

Claim 1 further recites the step of "setting the ports providing the electric supply of the antenna circuit to '1', to supply the antenna circuit at full power level." Petitioner argues that, as described above, each of buffers 200A–200F may be *disconnected* selectively from the other buffers to vary the amplitude of the signal that drives antenna 108. Pet. 18 (citing Ex. 1004, col. 2, ll. 40–43, col. 2, ll. 60–65; Ex. 1003 ¶ 37). Thus, the maximum possible drive signal to antenna 108 may be achieved when each of buffers 200A–200F are connected and when each is configured to provide a high output power level to antenna 108. *Id.* (citing Ex. 1004, col. 5, ll. 30–33; Ex. 1003 ¶ 38). Petitioner concludes that "[c]ontrolling the buffers (200A-200F) to provide a high output power level represents setting the buffers (200A-200F) to 1." *Id.* (citing Ex. 1003 ¶ 38).

Patent Owner disagrees and contends instead that the output of each of the buffers simply tracks its input. PO Resp. 40. Consequently, Patent Owner contends that none of Sears's buffers 200A–200F is placed into a "1" state, but each of buffers 200A–200F simply outputs whatever input it receives. *Id.* (citing Ex. 2027 ¶ 56). Further, Patent Owner contends that Sears discloses three possible modes of operation: (1) power modulation by varying "the duty cycle of the oscillations of the carrier signal sent to power amplifier 106" (*id.* (citing Ex. 1004, col. 7, ll. 4–6)); (2) power modulation by varying the voltage of a variable power supply, e.g., power supply 399 (*id.* at 41 (citing Ex. 1004, col. 6, ll. 36–38)); and (3) antenna power modulation by varying the number of buffers driving the antenna (*id.* (citing Ex. 1004, col. 6, ll. 39–40)).

Although Patent Owner contends that none of these methods teaches the "setting" step of claim 1, Dr. Tentzeris testifies that this third mode of

operation could be accomplished by connecting and disconnecting at least some of the buffers from the antenna circuit. Pet. 16 (citing Ex. 1003 ¶ 34); *see* PO Resp. 41. Sears teaches that the number of buffers driving the inductive antenna may be increased or decreased to vary the power delivered to the antenna and, consequently, to modulate the antenna signal. Pet. Reply 5 (citing Ex. 1004, col. 5, ll. 1–8); *see* Pet. 12 (citing Ex. 1004, Abstract, col. 2, ll. 62–64, col. 5, ll. 4–8, col. 6, ll. 5–46; Ex. 1003 ¶ 27); Ex. 1031 ¶ 42; Ex. 2046, 35:15–37:20. Patent Owner's declarant, Dr. Apsel, acknowledges that Sears teaches antenna power modulation by varying the number of buffers driving and that

> disconnecting the buffers *could arguably be viewed as placing them [in] a high impedance state*, [but] nothing about this disclosure suggests electrically powering the antenna by "at least two ports of the control circuit," and then setting any of the buffers to "1" to supply the antenna circuit at full power level.

PO Resp. 41 (emphasis added) (quoting Ex. 2027 ¶ 60). We are persuaded that a person of ordinary skill in the art would have understood that Sears teaches the recited "setting" step, based on Petitioner's arguments and the testimony of both Dr. Tentzeris and Dr. Apsel. Pet. 12; Pet. Reply 4–5; Ex. 1003 ¶ 34; Ex. 2027 ¶ 60; *see* PO Resp. 41.

Claim 1 further recites the step of "changing the state of at least one of the ports providing the electric supply of the antenna circuit, to modulate the amplitude of the antenna signal." Referring to Sears's Figure 7, Petitioner argues that Sears teaches changing one or more of buffers 200A–200F (or their components 306–310) from a connected state to a disconnected state to modulate the amplitude of the oscillating waveform of the carrier signal. Pet. 19–20 (reproducing annotated Figure 7 of Sears); *see* Ex. 1003 ¶ 42. As

described with reference to other means of reducing the electric supply to Sears's antenna circuit (*see* Ex. 1004, col. 7, ll. 13–19), "[a]mplitude 702 is the reduced amplitude representing a part of some information that is transmitted by the antenna" (*id.*; *see id.* at col. 7, ll. 23–25; Ex. 1003 ¶¶ 43, 44). Patent Owner does not contend that Sears does not teach this limitation. *See* PO Resp. 41; Pet. Reply 7. Therefore, based on Petitioner's arguments and evidence, we also are persuaded that a person of ordinary skill in the art would have understood that Sears teaches the recited "changing" step.

b. Claim 2

Claim 2 recites the method of claim 1, "in which the ports providing the electric power supply of the antenna circuit are set to '0', for 100% modulation of the antenna signal." Petitioner argues that Sears describes modulating the amplitude of the drive signal to antenna 108. Pet. 20 (citing Ex. 1004, Abstract, col. 6, ll. 39–46); *see* Ex. 1003 ¶ 45. In particular, Sears teaches that "[i]n order to be backward compatible with an older RF system, the alternate modulation percentage must be nearly 100%." *Id.* (quoting Ex. 1004, col. 7, ll. 32–35). Moreover, as noted above, each of buffers 200A–200F has a low output level (e.g., ground) that can be set to a low level output by coupling the negative field effect transistor source in each of the inverters in buffer 200 to ground. Pet. 20 (citing Ex. 1004, col. 5, ll. 9–38); *see* Ex. 1003 ¶ 46. Consequently, Petitioner argues that

> Because each of the buffers (200A–200F) can output a low output level corresponding to ground, and that the minimum aggregate output level of all of the buffers (200A–200F) is zero volts, Sears sets the ports providing the electric power supply of the antenna circuit to "0", for 100% modulation of the antenna signal.

Pet. 21 (citing Ex. 1003 ¶ 47).

Sears teaches that the 100% modulation "can be provided through the power antenna signal 417 and NAND gate 416." Ex. 1004, col. 7, ll. 34–36. As argued above, amplitude modulation may be achieved by varying the number of buffers 200A–200F, and each of these buffers can provide a low level equal to ground (i.e., zero volts). Pet. 21 (citing Ex. 1004, col. 6, ll. 56–58). Thus, Petitioner argues that a person of ordinary skill in the art would have understood that, to achieve the "100% modulation," both or all of the buffers 200A–200F supplying power would provide a low level output and drive antenna 108 with an aggregate drive signal of zero volts. *Id.* (citing Ex. 1004, col. 6, ll. 56–58); *see* Ex. 1003 ¶ 48.

Patent Owner disagrees and contends that Sears does not achieve 100% modulation by "setting" buffers. PO Resp. 42–43. Instead, Sears explains that 100% modulation "can be provided through the power antenna signal 417 and NAND gate 416." Ex. 1004, col. 7, ll. 32–35, Fig. 4.

Sears's Figure 4 is reproduced below:

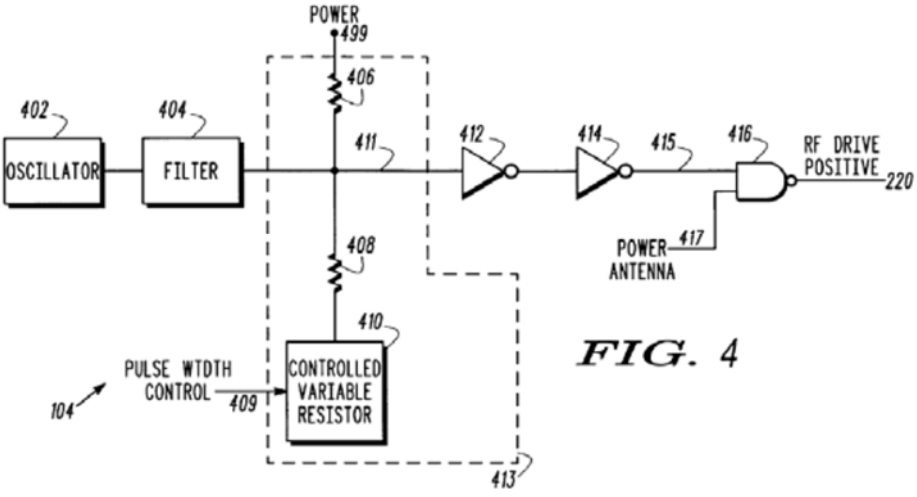

FIG. 4

Figure 4 is a block diagram of a modulator circuit for use with a power amplifier in accordance with an embodiment of Sears's invention. *Id.* at col. 2, ll. 20–23. The modulator circuit of Figure 4 depicts that power

antenna signal 417 may be used to drive the output of NAND gate 416 to a low-level when 100% modulation is desired. *Id.* at col. 6, ll. 23–25. Specifically, Patent Owner contends that "[w]hen power antenna signal 417 is low, the output of NAND gate 416 stays high without oscillations thereby attenuating the power output by the antenna 108." *Id.* at col. 6, ll. 29–32; *see* PO Resp. 42–43. Thus, Patent Owner concludes that "by providing a constant low voltage to the power input 417 of the NAND gate, the output of the NAND gate will always be high and the signal is attenuated." PO Resp. 43.

According to Dr. Apsel, "Sears does not disclose achieving 100% modulation of the antenna signal by setting the ports providing the electric power supply to '0,' or by manipulation of buffers." Ex. 2027 ¶ 63. Nevertheless, Dr. Apsel testifies that "Sears describes 100% modulation *simply by removing the input signal* to the buffers." *Id.* (emphasis added).

Consistent with Dr. Apsel's testimony, Petitioner notes that "Sears teaches that the 'RF Drive Positive signal 220 [is an] input into buffers

200A-200F." Pet. Reply 6 (citing Ex. 1004, col. 4, ll. 15–20, Figs. 2, 4); *see* Pet. 14. Sears's Figure 2, as annotated by Petitioner, is reproduced below:

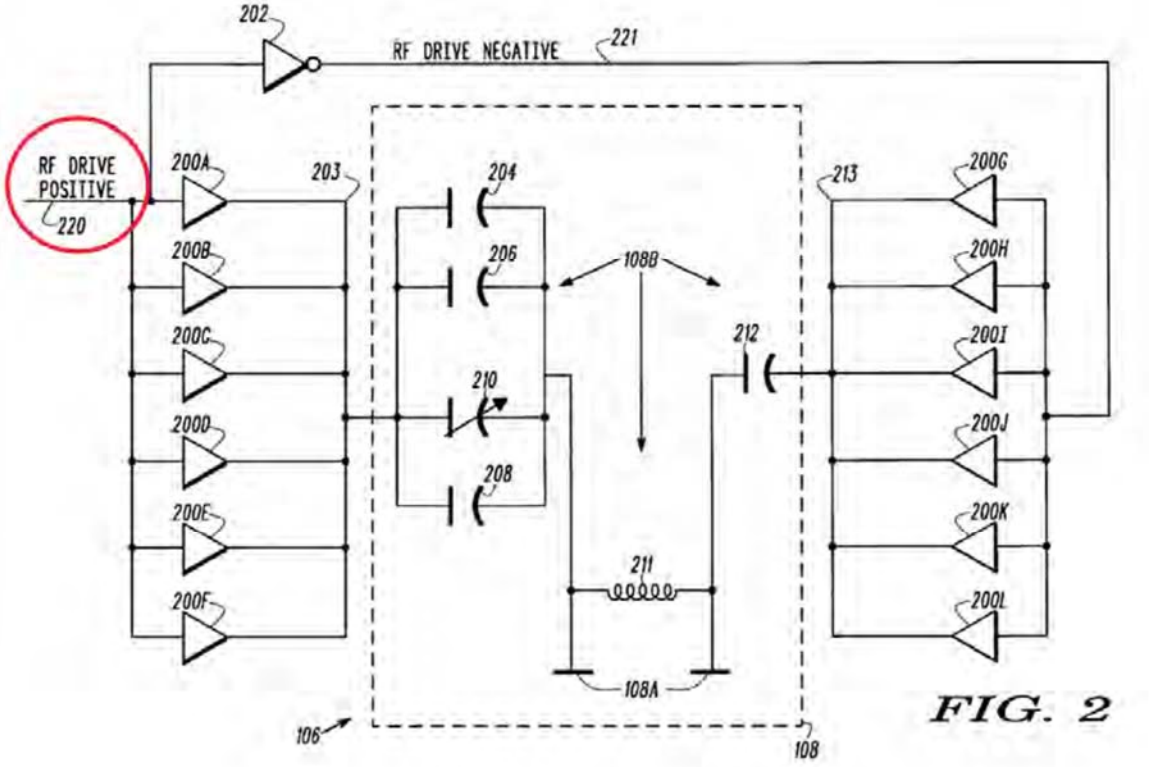

Figure 2 is a schematic diagram of a power amplifier with associated circuitry in accordance with an embodiment of the Sears invention.

Ex. 1004, col. 2, ll. 14–16. Thus, referring to Sears's Figure 4, the output of NAND gate 416 is "RF Drive Positive 220," which is the input to buffers 200A–200F, as depicted in Sears's Figure 2. Because each buffer 200A–200F is a tristate inverter (Ex. 1004, col. 4, ll. 36–42, Fig. 2), if, as Patent Owner asserts, the input to buffers 200A–200F is always high during a 100% modulation, *the output of buffers 200A–200F is always low* (Ex. 1031 ¶ 50; *but see* Paper 47, 6). Accordingly, Sears's buffers 200A–200F are set to zero when 100% modulation is performed, as recited in claim 2. *Id.* Therefore, after considering both parties' arguments and evidence, including

the testimony of Dr. Tentzeris and Dr. Apsel, we are persuaded that a person of ordinary skill in the art would have understood that Sears teaches the recited limitations of claim 2.

c. Claims 3 and 5

Petitioner maps in detail how the additional limitations of dependent claims 3 and 5 are taught or suggested by Sears. Pet. 21–24. Patent Owner does not contend that Sears does not teach these additional limitations. *See* PO Resp. 41; Pet. Reply 7. We agree with and adopt Petitioner's analysis of Sears and mapping of Sears on the additional limitations of claims 3 and 5, as set forth in the Petition.

For the reasons set forth above, Petitioner demonstrates by a preponderance of the evidence that claims 1–3 and 5 are unpatentable over Sears.

4. Obviousness over Sears and Nguyen

As noted above, Petitioner argues that Sears discloses all of the limitations of the challenged claims, with the exception of the operation of a control circuit recited in challenged claim 1. Pet. 24. Nevertheless, Petitioner argues that Nguyen teaches "a tristatable buffer of the type referenced by Sears, and expressly acknowledges that a tristatable buffer can be set to '1,' '0,' or a high impedance state." *Id.* (citing Ex. 1005, Abstract, col. 1, ll. 10–18); Pet. Reply 7. Petitioner relies on the teachings of Nguyen to provide more explicit detail of this feature. Pet. 24. In particular, Nguyen teaches "an output line of a tristate device typically provides one of three states: logic 0, logic 1, and high impedance." Pet. Reply 4 (quoting Ex. 1005, Abstract); *see id.* at Fig. 2, col. 1, ll. 16–18; Ex. 1031 ¶ 41.

Initially, Patent Owner contends that Nguyen fails to remedy the deficiencies in Sears and that Nguyen only teaches a tristatable inverter. PO Resp. 43–44. In particular, Patent Owner contends that Nguyen is directed simply to inverters and not to any sort of radio-frequency device and that Nguyen does not teach much more than inverters. *Id.* at 44. Consequently, Patent Owner contends that Nguyen fails to teach the "setting" step, as recited in claim 1, or "set[ting] to '0', for 100% modulation of the antenna signal," as recited in claim 2. *Id.* As discussed above, however, Petitioner argues, and we agree, that Sears, rather than Nguyen, teaches these limitations. *See supra* Sections II.C.3.a. and b.

Petitioner further argues that a person of ordinary skill in the art would have had reason to combine the teachings of Sears and Nguyen because "Nguyen is configured to minimize switching delay in 'integrated circuit devices.'" Pet. 25 (citing Ex. 1005, col. 1, ll. 6–9; Ex. 1003 ¶ 55). Alternatively, Petitioner contends that a person of ordinary skill in the art would have understood that Nguyen's device merely would have been the substitution of a device operating in the same manner as Sears's CMOS hex inverter circuit. *Id.*; *see* Ex. 1003 ¶ 55; *see also KSR*, 550 U.S. at 416 ("The Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.").

Patent Owner contends that a person of ordinary skill in the art would not have had reason to combine the teachings of Sears and Nguyen because to do so would be contrary to Sears's goals. PO Resp. 45–47. In particular, Patent Owner contends that "Sears seeks to construct a power amplifier that

is 'readily mass manufactured, power efficient, flexible and compact in size.'" *Id.* at 46 (quoting Ex. 1004, col. 2, ll. 6–8). Further, Sears explains that one of the advantages of its device is that it "uses a minimum number of low power devices." Ex. 1004, col. 7, ll. 52–55. Patent Owner contends, however, that Nguyen's inverters are complicated and include numerous additional components. Ex. 2027 ¶ 68. Despite their complexity, Dr. Apsel acknowledges that the inverters designed by Nguyen "do have certain advantages." *Id.* Dr. Apsel does not testify whether a person of ordinary skill in the art would have found that any of those advantages outweigh the disadvantage of greater complexity. *Id.* In particular, Dr. Apsel testifies that

> It is possible, for instance, that a buffer design relying on Nguyen's inverters would provide enough power to obviate the need for the parallel buffers in Sears' circuit. Without knowing more design parameters (e.g., internal resistances, conductances, etc.), it would not be readily apparent that Nguyen's inverters could be used in Sears' circuit.

Id. ¶ 69 (emphasis added). Thus, Dr. Apsel acknowledges that it is unclear whether Nguyen's inverter would increase or reduce the complexity of the Sears circuitry. Moreover, Dr. Apsel does not address whether the combination of the teaching of Sears and Nguyen would fail to achieve any of the other goals listed by Sears.

Therefore, we remain persuaded that either Nguyen's detailed description of the tristate operation of its inverter or the substitution of one of Nguyen's inverters for an equivalent device would have been sufficient reason for a person of ordinary skill in the art to combine the teachings of Sears and Nguyen to achieve the subject matter recited in the challenged claims.

Patent Owner only disputes the combination of the teachings of Sears and Nguyen, as those teachings are applied to claim 1. Petitioner relies on Sears to supply the additional limitations of dependent claims 2, 3, and 5. *See* Pet. 21–24. For the reasons set forth above with respect to Sears, we agree with and adopt Petitioner's analysis with respect to claims 2, 3, and 5.

For the reasons set forth above, Petitioner demonstrates by a preponderance of the evidence that claims 1–3 and 5 are unpatentable over Sears and Nguyen.

D. Motion to Exclude Evidence

Patent Owner filed a Motion to Exclude Evidence (Paper 49, "Mot. to Excl."). In particular, Patent Owner seeks to exclude (1) paragraphs 128–134, 141–188, and 190–200 of Exhibit 1031, "under Fed. R. Evid. 401 as not relevant to issues at trial because they were not cited in the Petitioner's Reply" (Mot. to Excl. 1–2); and (2) paragraphs 67–85 and 120–127 of Exhibit 1031, "under Fed. R. Evid. 602 because Dr. Tentzeris has no personal knowledge of the facts discussed in these paragraphs nor is he an expert regarding them" (*id.* at 2–6). Petitioner filed an Opposition to Patent Owner's Motion to Exclude Evidence (Paper 53, "Opp. to Mot."), and Patent Owner filed a Reply to Petitioner's Opposition to Patent Owner's Motion to Exclude Evidence (Paper 54, "Reply to Opp.").

With respect to its first objection, Patent Owner contends that "[n]owhere in the record does Petitioner rely on paragraphs 128–134, 141–188, and 190–200 of the Reply Declaration or identify with any particularity how these paragraphs are relevant to the issues in this proceeding." Mot. to Excl. 1. Because Petitioner does not rely on these paragraphs, Patent Owner contends that these paragraphs cannot be relevant under Fed. R. Evid. 401 to

Petitioner's Reply to the arguments or evidence presented in the Patent Owner Response. *Id*. at 1–2. Petitioner disagrees and argues that

> [E]ach paragraph is relevant to issues in this case because: (1) ¶¶128–134, which respond to PO's actual reduction to practice evidence, are referenced in an unchallenged paragraph of Dr. Tentzeris' declaration (¶66) and discuss evidence also discussed in other relevant paragraphs (¶¶66 and 77); and (2) ¶¶141–188 and ¶¶190–199 address specific evidence raised by PO in its PO Response. ¶200 is simply Dr. Tentzeris' concluding paragraph.

Opp. to Mot. 2. Patent Owner replies that Petitioner is merely seeking to place "the burden on the Board to sift through the Reply and accompanying Declaration to determine which paragraphs were properly cited and relied on and then determine the appropriate weight." Reply to Opp. 1.

We agree with Petitioner that Patent Owner's objections to paragraphs 128–134, 141–188, and 190–200 of Exhibit 1031 go to the weight to be given this evidence, rather than to its admissibility. The Board, sitting as a non-jury tribunal with administrative expertise, is well positioned to determine and assign appropriate weight and/or relevance to evidence presented. *See Gnosis S.p.A. v. S. Ala. Med. Sci. Found.*, Case IPR2013-00118, slip op. at 43 (PTAB June 20, 2014) (Paper 64). Therefore, we *deny* Patent Owner's request to exclude these paragraphs.

With respect to its second objection, Patent Owner contends that, in paragraphs 67–85 and 120–127 of Exhibit 1031,

> Petitioner has offered Dr. Tentzeris as an expert on technical issues and not as to the facts leading up to the development of the M210H device at INSIDE. Dr. Tentzeris is not an expert regarding these facts and possesses no personal knowledge of them. . . . Dr. Tentzeris' opinions regarding these facts is not based on his technical expertise or his own personal knowledge. Instead, Petitioners use the Reply Declaration to give the

> appearance of expert authority to what is otherwise a meritless attorney argument.

Mot. to Excl. 2–3. In particular, Patent Owner contends that paragraphs 67–85 of Exhibit 1031 contain unfounded speculation on the dates of exhibits and are not based on Dr. Tentzeris's personal knowledge. *Id.* at 3–4. Further, Patent Owner contends paragraphs 120–127 of Exhibit 1031 "contain unfounded speculation regarding software development for the M210H Prototype and are not based on Dr. Tentzeris' personal knowledge or expertise." *Id.* at 4–6 (emphasis omitted). Because we do not rely on paragraphs 67–85 and 120–127 of Exhibit 1031 in reaching our decision here, we *dismiss* Patent Owner's Motion to Exclude Evidence, with respect to these paragraphs, as moot.

III. CONCLUSION

Petitioner demonstrates by a preponderance of the evidence that claims 1–3 and 5 of the '551 patent are unpatentable.

IV. ORDER

For the reasons given, it is

ORDERED that claims 1–3 and 5 of the '551 patent are unpatentable as

1. rendered obvious over Sears; and
2. rendered obvious over Sears and Nguyen;

FURTHER ORDERED that Patent Owner's Motion to Exclude Evidence (Paper 49) is *denied* with respect to paragraphs 128–134, 141–188, and 190–200 of Exhibit 1031 and *dismissed* as moot with respect to paragraphs 67–85 of Exhibit 1031; and

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

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