

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MEDIATEK INC.,
Petitioner,

v.

PARKERVISION, INC.,
Patent Owner.

IPR2024-00796
Patent 7,483,686 B2

Before MICHAEL R. ZECHER, BART A. GERSTENBLITH, and
IFTIKHAR AHMED, *Administrative Patent Judges*.

AHMED, *Administrative Patent Judge*.

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

I. INTRODUCTION

MediaTek Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of claims 1–20 of U.S. Patent No. 7,483,686 B2 (Ex. 1001, “the ’686 patent”). ParkerVision, Inc. (“Patent Owner”) filed a Preliminary Response (Paper 6, “Prelim. Resp.”). With our authorization, Petitioner filed a Reply to the Preliminary Response addressing Patent Owner’s arguments for discretionary denial. Paper 7 (“Prelim. Reply”).

We have authority to determine whether to institute an *inter partes* review. *See* 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2022). To institute an *inter partes* review, we must determine that the information presented in the Petition shows “a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). Based on the information presented in the Petition and the supporting evidence, we are persuaded that there is a reasonable likelihood that Petitioner would prevail with respect to at least one of the challenged claims. Accordingly, we institute an *inter partes* review of the challenged claims on the grounds set forth in the Petition.

II. BACKGROUND

A. *Real Parties in Interest*

Petitioner identifies MediaTek Inc., MediaTek USA Inc., MTK Wireless Limited (UK), Gaintech Co. Limited, and MediaTek Investment Singapore Pte. Ltd. as the real parties in interest. Pet. 109. Patent Owner identifies itself as a real party in interest. Paper 4, 1.

B. Related Matters

The parties identify the following proceedings as related matters involving the '686 patent: *ParkerVision, Inc. v. MediaTek Inc.*, No. 6:23-cv-00375 (W.D. Tex., filed May 16, 2023), and *ParkerVision, Inc. v. NXP Semiconductors NV*, No. 6:23-cv-00389 (W.D. Tex., filed May 19, 2023). Pet. 109–10; Paper 4, 1–2.

C. The '686 patent

The '686 patent, titled “Universal Platform Module and Methods and Apparatuses Relating thereto Enabled by Universal Frequency Translation Technology,” issued January 27, 2009, with claims 1–20. Ex. 1001, codes (45), (54), 50:57–52:59. The '686 patent discloses a communication system “that can transmit and receive one or more information signals in one or more protocols using one or more bearer services.” *Id.* at code (57).

The '686 patent discloses “a universal platform module (UPM) that operates for and/or within a device,” such as a phone or personal digital assistant (PDA). *Id.* at 7:32–38. The “UPM may include one or more receivers, transmitters, and/or transceivers,” including universal frequency translation (UFT) modules, which perform frequency translation operations. *Id.* at 7:38–44. The “UPM utilizes protocols and/or bearer services and/or combinations thereof to exchange and/or process information with other components on any given network or networks,” such as Wireless Application Protocol (WAP), Bluetooth, and IEEE 802.11. *Id.* at 7:48–54.

With one UFT module in a device, “the UPM can perform multi-platform operations nearly simultaneously.” *Id.* at 8:23–24. With more than one UFT module, “multiple protocols and multiple bearer services can be employed simultaneously.” *Id.* at 8:30–32.

Figure 25A of the '686 patent, reproduced below, illustrates a high-level block diagram of an example conventional multi-mode device. *Id.* at 4:7–8.

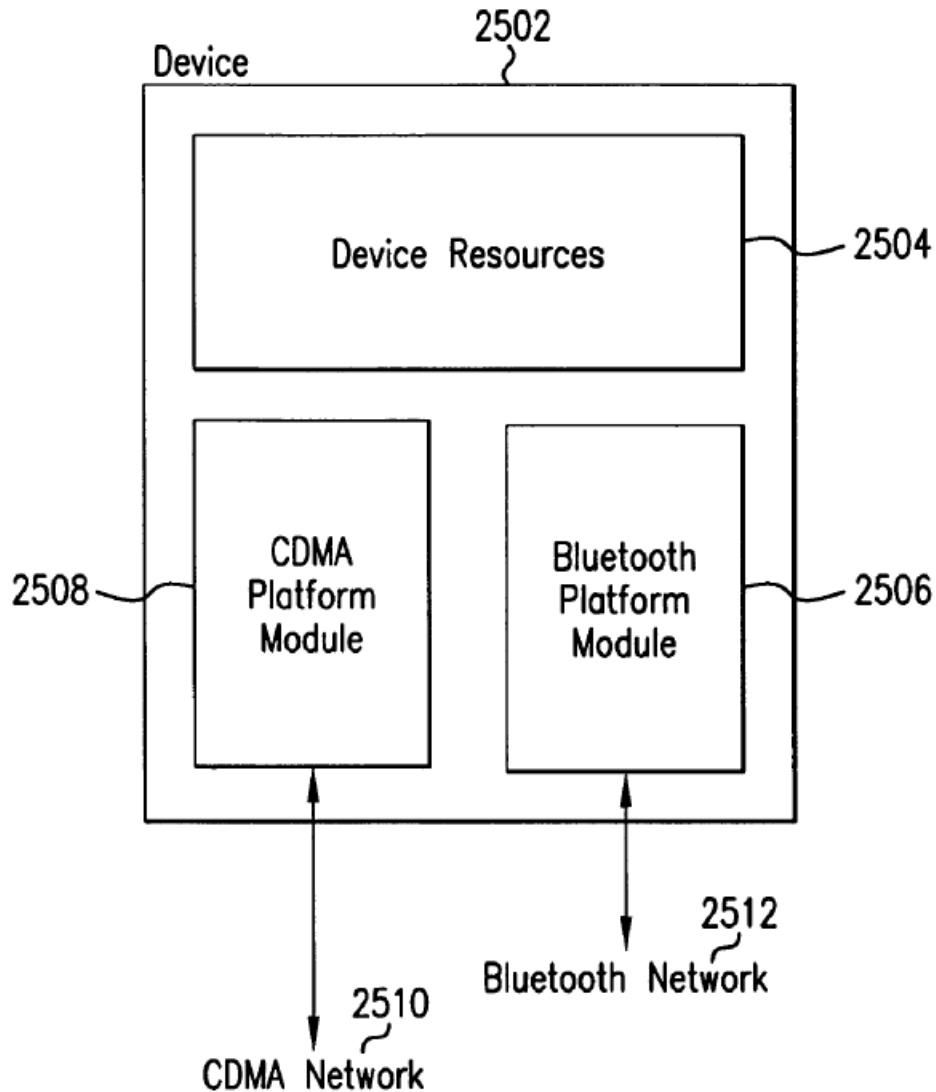


Figure 25A shows multi-mode device 2502, which includes device resources 2504, code division multiple access (CDMA) platform module 2508 connected to CDMA network 2510, and Bluetooth platform module 2506 connected to Bluetooth network 2512. *Id.* at 34:45–49, 45:10–11 (defining CDMA).

D. Challenged Claims

Petitioner challenges claims 1–20 of the '686 patent. Claims 1 and 11 are independent. Claims 1 and 11 are illustrative of the claimed subject matter and are reproduced below:

1. [pre] An apparatus capable of performing simultaneous multi-platform operations, comprising:
 - [a] at least one multi-platform module including a plurality of transceivers each having at least one frequency translating module, wherein said at least one frequency translating module comprises
 - [b] a switch configured to operate according to an energy transfer signal, and to sub-sample and transfer energy from a first electromagnetic (EM) signal, and
 - [c] a control module configured to enable the at least one multiplatform module to communicate with at least one of a plurality of communication links, the control module including a plurality of protocol/standard sub-modules.

Ex. 1001, 50:57–51:3 (Petitioner's annotations added); Pet. vii.

11. [pre] A method for performing simultaneous multi-platform operations, comprising:
 - [1.1] (1) controlling at least one multi-platform module to communicate with at least one of a plurality of communication links [1.2] using a control module [1.3] having a plurality of standard/protocol sub-modules, wherein the at least one multi-platform module includes [1.4] a plurality of transceivers each having at least one frequency translation module, wherein said at least one1 frequency translation module comprises
 - [FTM-1.1] a switch [FTM-1.2] configured to operate according to an energy transfer signal [FTM-1.3] and to sub-sample and transfer energy from a first electromagnetic (EM) signal, and
 - [FTM-2.1] a storage module coupled to said switch and configured to store said transferred energy

[FTM-2.2] wherein a second EM signal is generated from said stored energy, said second EM signal having a frequency different from said first EM signal

[2] (2) operating a first transceiver in conformance with a first protocol/standard combination using a first standard/protocol submodule; and

[3] (3) operating a second transceiver in conformance with a second protocol/standard combination using a second standard/protocol sub-module.

Ex. 1001, 51:46–52:9 (Petitioner’s annotations added); Pet. ix–x.

E. Asserted Grounds of Unpatentability

Petitioner contends that the challenged claims are unpatentable based on the following grounds:

Claims Challenged	35 U.S.C. §¹	Reference(s)/Basis
1–20	103(a)	Nevo ² , Avitabile ³
1–20	103(a)	Young ⁴ , Estabrook ⁵

¹ Because the challenged claims of the ’686 patent have an effective filing date before March 16, 2013, patentability is governed by the pre-AIA version of 35 U.S.C. § 103.

² U.S. Patent No. 6,600,726 B1, issued July 29, 2003 (Ex. 1004, “Nevo”).

³ G. Avitabile, A. Cidronali, & G. Manes, S-band digital downconverter for radar applications based on a GaAs MMIC fast sample-and-hold, IEEE PROCEEDINGS-CIRCUITS, DEVICES, AND SYSTEMS, Vol. 143, No. 6 (Dec. 1996) (Ex. 1006, “Avitabile”).

⁴ U.S. Patent No. 6,643,522 B1, issued Nov. 4, 2003 (Ex. 1003, “Young”).

⁵ P. Estabrook, The direct conversion receiver: Analysis and design of the front-end components, PH.D. DISSERTATION, STANFORD UNIVERSITY (Aug. 1989) (Ex. 1005, “Estabrook”).

Claims Challenged	35 U.S.C. § ¹	Reference(s)/Basis
1–20	103(a)	Young, Estabrook-1988 ⁶ , Estabrook-1989 ⁷

Pet. 3. Additionally, Petitioner supports its challenge with a Declaration of Dr. Lawrence E. Larson (Ex. 1002), a Declaration of June Ann Munford (Ex. 1018), a Declaration of Polly Estabrook (Ex. 1019), and a Declaration of Gianfranco Avitabile (Ex. 1020).

I. DISCRETIONARY DENIAL

Patent Owner’s Preliminary Response raises one issue for our consideration—whether we should exercise our discretion to deny institution pursuant to 35 U.S.C. § 314(a). Prelim. Resp. 1. Specifically, Patent Owner contends we should exercise our discretion under 35 U.S.C. § 314(a) to deny institution “because of the advanced state of parallel litigation pending in the [U.S. District Court for the] Western District of Texas” (Western District of Texas Litigation). *Id.* Patent Owner asserts that, “[g]iven the current posture and schedule of the underlying Texas case, the factors set forth in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) [(Order Authorizing Supplemental Briefing on Discretionary Denial)] (precedential), . . . weigh in favor of *denying* institution of an [*inter partes* review].” *Id.*; *see id.* at 2–10 (discussing the *Fintiv* factors).

⁶ P. Estabrook & B.B. Lusignan, A Mixer Computer-Aided Design Tool Based in the Time Domain, 1988 IEEE MTT-S INTERNATIONAL MICROWAVE SYMPOSIUM DIGEST, pp. 1107–10 (1988) (Ex. 1016, “Estabrook-1988”).

⁷ P. Estabrook & B.B. Lusignan, The Design of a Mobile Radio Receiver using a Direct Conversion Architecture, IEEE 39TH VEHICULAR TECHNOLOGY CONFERENCE (May 1989) (Ex. 1017, “Estabrook-1989”).

Petitioner filed Exhibit 1015, with the Petition, in which Petitioner Stipulate[s] and agree[s] that, if the PTAB institutes an *inter partes review* proceeding (“IPR”) for U.S. Patent No. 7,483,686 on the grounds presented in [the Petition], [Petitioner] will not pursue an invalidity defense in [the Western District of Texas Litigation] that the patent claims subject to the instituted IPR are invalid based on the same grounds as in the [P]etition or any grounds that could have reasonably been raised in the [P]etition.

Ex. 1015 (letter from M. Bernstein to J. Charkow, dated May 21, 2024); *see also* Prelim. Reply 1 (“Patent Owner’s Preliminary Response (Paper 6) fails to acknowledge, much less address, Petitioner’s *Sotera* stipulation not to pursue in the related litigation the same grounds or any grounds of invalidity that could reasonably have been raised in this IPR.”); *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (Dec. 1, 2020) (Decision Granting Institution) (precedential as to § II.A).

As set forth in the Director’s Memorandum, Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (dated June 21, 2022), at 7, *available at* https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf,

the [Patent Trial and Appeal Board] will not discretionarily deny institution of an IPR . . . in view of parallel district court litigation where a petitioner stipulates not to pursue in a parallel district court proceeding the same grounds as in the petition or any grounds that could have reasonably been raised in the petition.

Petitioner’s stipulation (Ex. 1015) satisfies the language from the Director’s Memorandum quoted above. Therefore, we need not analyze each *Fintiv*

factor to reach the determination that we will not exercise our discretion to deny institution in view of the parallel Western District of Texas Litigation.

III. ANALYSIS

A. Legal Standards – Obviousness

A claim is unpatentable if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. 35 U.S.C. § 103(a); *see 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) where in evidence, so-called secondary considerations, including commercial success, long-felt but unsolved needs, failure of others, and unexpected results. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966).

When evaluating a combination of teachings, we must also “determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). “[T]here must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *Kahn*, 441 F.3d at 988.

“[W]here a party argues a skilled artisan would have been motivated to combine references, it must show the artisan ‘would have had a reasonable expectation of success from doing so.’” *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1360–61 (Fed. Cir.

2017) (quoting *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1068–69 (Fed. Cir. 2012)).

B. Level of Ordinary Skill in the Art

We review Petitioner’s asserted obviousness grounds in view of the understanding of a person of ordinary skill in the art at the time of the invention. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). The person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the time of the invention. *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). Factors that may be considered in determining the level of ordinary skill in the art include, but are not limited to, the types of problems encountered in the art, the sophistication of the technology, and educational level of active workers in the field. *Id.* In a given case, one or more factors may predominate. *Id.*

Petitioner contends that a person having ordinary skill in the art “would have had at least a bachelor’s degree in electrical engineering or a related subject and two or more years of experience in the field of [radio frequency (‘RF’)] circuit design, or at least five years of work experience and training in the design and development of RF circuits and/or systems,” and “[l]ess work experience may be compensated by a higher level of education, such as a master’s degree.” Pet. 14–15 (citing Ex. 1002 ¶ 38). Patent Owner does not address the level of ordinary skill in the art in its Preliminary Response. *See generally* Prelim. Resp.

We determine, on the current record, that Petitioner’s proposed level of ordinary skill is consistent with the ’686 patent and the asserted prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d at 1579. We adopt that level of ordinary skill in

deciding whether to institute trial. We will make a final determination as to the level of ordinary skill in the art based on the full trial record.

C. Claim Construction

In this *inter partes* review, claims are construed using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b). *See* 37 C.F.R. § 42.100(b) (2020). The claim construction standard includes construing claims in accordance with the ordinary and customary meaning of such claims as would have been understood by one of ordinary skill in the art at the time of the invention. *See id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc). In construing claims in accordance with their ordinary and customary meaning, we take into account the specification and prosecution history. *Phillips*, 415 F.3d at 1315–17.

Petitioner contends that all claim terms should be given their plain and ordinary meaning. Pet. 15 (citing Ex. 1002 ¶ 74). Petitioner, however, notes that several claim terms in the ’686 patent, or closely related claim terms for patents related to the ’686 patent, have been construed during prior litigation involving Patent Owner. *Id.* Petitioner discusses five claim terms and various constructions proposed or adopted in prior litigation. *Id.* at 15–20.

1. Storage module

According to Petitioner, “storage module” should be construed as “a module that stores non-negligible amounts of energy from an input electromagnetic signal.” Pet. 15. Petitioner argues that the specification of U.S. Patent No. 6,061,551 (“the ’551 patent”), which the ’686 patent incorporates by reference, supports this construction. *Id.* (citing Ex. 1001, 1:47–52; Ex. 1008, 66:55–67; Ex. 1002 ¶¶ 76–77).

Petitioner notes Patent Owner has advanced a slightly different construction in the Western District of Texas Litigation, requiring a “storage module” to also be part of an “energy transfer system.” *Id.* (citing Ex. 1009, 2). Petitioner, however, asserts that Patent Owner’s proposed construction has been rejected by the U.S. Court of Appeals for the Federal Circuit in an appeal from an *inter partes* review decision involving a related patent, based on the court’s analysis of the ’551 patent’s disclosure. *Id.* (citing *Parkervision, Inc. v. Vidal*, 88 F.4th 969, 975–78 (Fed. Cir. 2023)); *see also Intel Corp. v. Parkervision, Inc.*, IPR2020-01265, 2022 WL 212407, at *16 (PTAB Jan. 21, 2022) (providing a detailed analysis of the ’551 patent’s disclosure and construing the term). Regardless, Petitioner argues that the challenged claims are unpatentable under either construction. *Id.* at 16.

2. Switch

According to Petitioner, “switch” should be construed as “an electronic device for opening and closing a circuit.” Pet. 16 (citing Ex. 1001, 13:27–31, 20:23–21:5). Petitioner asserts Patent Owner advanced a construction in the Western District of Texas Litigation that a “switch” must be “dictated by an independent control input.” *Id.* (citing Ex. 1009, 3). Petitioner contends that the plain and ordinary meaning of “switch” does not require an “independent control input,” and that the ’686 patent specification discloses examples of switches lacking such an input. *Id.* at 16–18 (citing Ex. 1001, 13:27–31, 20:23–21:5, Figs. 20A-1, 47, 52C). Petitioner asserts that the Board has previously rejected the construction advanced by Patent Owner in a related *inter partes* review, which the Federal Circuit has affirmed. *Id.* at 18–19 (citing *Intel Corp. v. Parkervision, Inc.*, IPR2021-00346, Paper 33 at 15–26 (PTAB June 30, 2022)). Regardless,

Petitioner argues that the challenged claims are unpatentable under either construction. *Id.* (citing Ex. 1002 ¶¶ 78–80).

3. *Coupled*

Petitioner states that, in the Western District of Texas Litigation, it has proposed that “coupled” should be construed as “directly connected or connected through a wire (or a closed switch).” Pet. 19 (citing Ex. 1012, 25). Petitioner asserts that Patent Owner has argued there that “coupled” should have its plain and ordinary meaning. *Id.* (citing Ex. 1009, 3). Regardless, Petitioner argues that the challenged claims are unpatentable under either construction. *Id.* (citing Ex. 1002 ¶ 81).

4. *Multi-platform module*

“In the [Western District of Texas Litigation], the parties agree ‘multi-platform module’ should be given its plain and ordinary meaning.” Pet. 19 (citing Ex. 1009, 4; Ex. 1047, 12). Petitioner asserts that “the ’686 patent teaches that ‘multi-platform operations’ refer to ‘multiple protocols and multiple bearer services . . . employed simultaneously.’” *Id.* (citing Ex. 1001, 8:13–32; Ex. 1002 ¶ 82).

5. *Sub-sample*

Petitioner contends that “sub-sample” should be given its plain and ordinary meaning. Pet. 20. Petitioner, however, notes that the U.S. District Court for the Middle District of Florida, in related case *ParkerVision, Inc. v. Qualcomm Inc.*, No. 3:11-cv-719 (M.D. Fla.), adopted a construction advanced by Patent Owner that “sub-sample” “refers to sampling at an aliasing rate, *i.e.*, at a rate that is less than or equal to twice the frequency of the signal being sampled.” *Id.* (citing Ex. 1014, 6–10). Petitioner asserts

that the plain and ordinary meaning encompasses this construction. *Id.* (citing Ex. 1002 ¶ 83).

Patent Owner does not take a position on claim construction in the Preliminary Response. *See generally* Prelim. Resp.

At this stage of the proceeding and on the present record, we need not expressly construe any of the five terms because, for the reasons discussed below, we find that Petitioner has established a reasonable likelihood of showing that the challenge claims would have been obvious to one of ordinary skill in the art under the constructions proposed by Petitioner here or those from prior litigation, and also because there is no present controversy as to the meaning of these terms in this proceeding. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’”) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

D. Obviousness Based on Nevo and Avitable

Petitioner asserts that claims 1–20 are unpatentable based on Nevo and Avitable. Pet. 20–58.

1. Scope and Content of the Prior Art

a) Nevo

Nevo is a patent titled “Multiple Wireless Communication Protocol Methods and Apparatuses.” Ex. 1004, code (54). Nevo “relates to the problem of concurrent wireless communication with multiple communication partners of different wireless communication protocols.” *Id.* at 1:17–21. Nevo describes a need for devices “to be able to operate ‘concurrently’ in multiple wireless protocols,” such as Bluetooth protocol to

peripheral devices, and IEEE 802.11 to other computing devices. *Id.* at 1:27–42. Because using two transmitters, one for each protocol, causes interference between the two protocol’s transmissions, Nevo seeks to address this problem in an efficient and low-cost manner. *Id.* at 1:52–60. Nevo discloses a device with a “control manager” to control two transmitters “in a coordinated manner.” *Id.* at 3:30–45. Nevo’s device controls each of the two transceivers to alternate between transmissions by one of the two transceivers, and receiving by both of the two transceivers. *Id.* at 3:49–52.

A diagram of Nevo’s wireless device, reproduced below, is shown in Figure 1. *Id.* at 2:25–26.

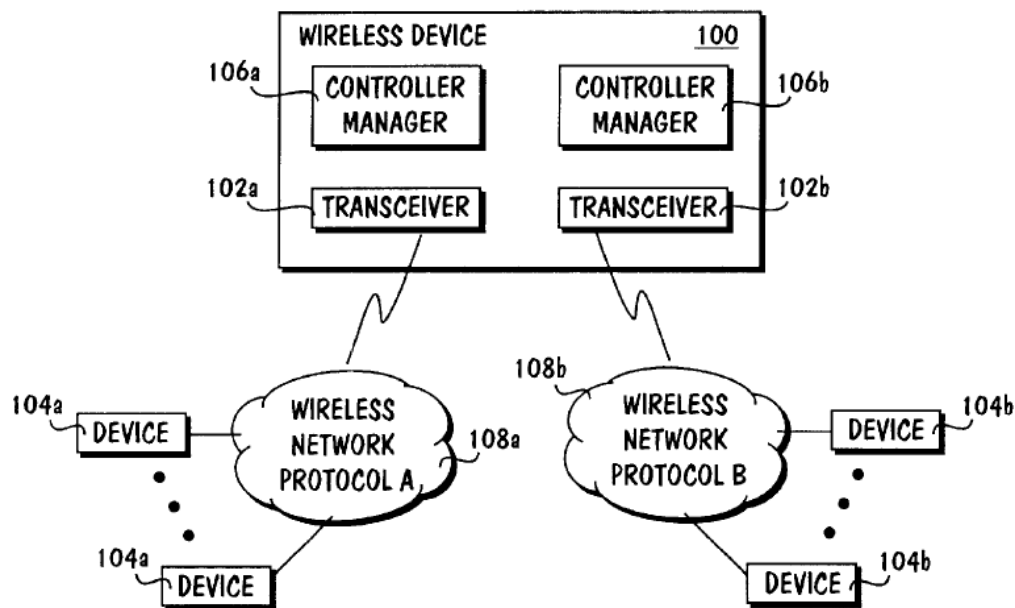


Figure 1 of Nevo shows, among other things, wireless device 100, with controller managers 106a and 106b, and transceivers 102a and 102b. *Id.* at 3:28–38.

b) Avitabile

Avitabile is a technical article describing a digital downconverter, “whose operation principle is based on the theory of subharmonic sampling

for narrowband waveforms.” Ex. 1006, 337.⁸ Avitabile describes that its downconverter “performs complex detection by means of the sample-and-hold (SH) in a single step by using a single-channel configuration. The key element of the down-converter is a very fast sampling circuit directly operating within the S-band.” *Id.* The downconverter uses “a very fast sampling circuit which also performs the holding function requested for subsequent [analogue-to-digital] conversion.” *Id.*

Avitabile describes that its downconverter’s architecture avoids the inherent problems related to the use of quadrature mixing, by replacing the coherent detection architecture with a single, fast SH circuit. *Id.* at 341. Avitabile describes that its downconverter was tested at 1 GHz and that “operation up to 3GHz is feasible.” *Id.*

2. Independent Claim 11

a) Preamble [pre]: A method for performing simultaneous multi-platform operations, comprising:

Petitioner contends that, if the preamble is treated as limiting, Nevo discloses or suggests it. Pet. 26. Petitioner contends that Nevo’s Figure 1 “depicts a wireless device having two transceivers (102a/102b) that can connect to two separate wireless networks (108a/108b), Bluetooth and IEEE 802.11, respectively.” *Id.* (citing Ex. 1004, 3:28–35, 4:46–55, Figs. 3, 5, 7, 9a, 11a, 13). Petitioner further contends that the “wireless device has control managers 106a/106b that control transceiver operation in a ‘coordinated manner’ to allow communication ‘with the respective wireless communication protocols at the same time’ (i.e., ‘simultaneous multi-platform operations’).” *Id.* at 26–27 (citing Ex. 1004, 3:38–45).

⁸ All references to the page numbers in Avitabile refer to the native pagination in Exhibit 1006.

Petitioner argues that a person of ordinary skill in the art would have understood “‘simultaneous multi-platform operations’ encompasses time-sharing of a resource, e.g., a [central processing unit] to run software or a shared transmission resource to transmit data.” *Id.* at 27 (citing Ex. 1002 ¶ 103).

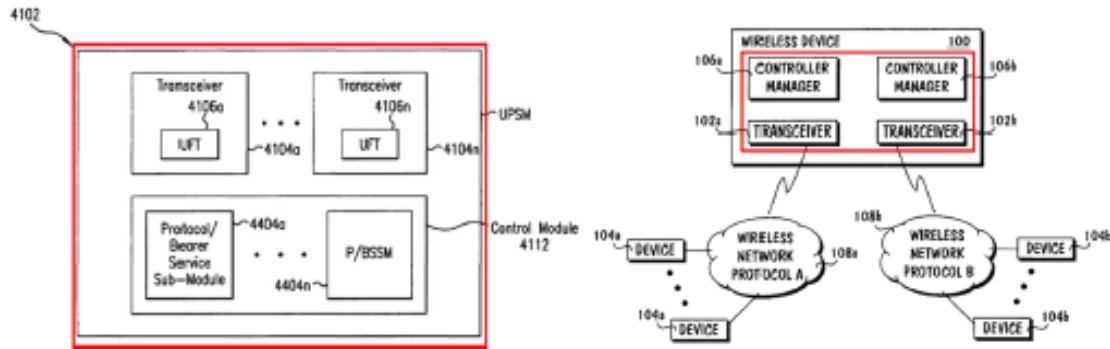
Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp. Based on our review of the current record, at this stage of the proceeding, we determine that the information presented sufficiently supports Petitioner’s assertion relating to the preamble of claim 11.⁹

b) Limitation [11.1]: (1) controlling at least one multi-platform module to communicate with at least one of a plurality of communication links

Petitioner contends that Nevo teaches this limitation because it discloses a wireless device with a multi-platform module (control managers 106a/106b and transceivers 102a/102b), and that “the multi-platform module is controlled to communicate with at least one of a plurality of communication links; its two transceivers (102a/102b) connect to two separate wireless networks (108a/108b).” Pet. 27–28 (citing Ex. 1004, 3:28–45, 4:46–55, Fig. 1).

According to Petitioner, Nevo teaches a multiplatform module in a similar manner to how the ’686 patent describes it. Pet. 29 (citing Ex. 1001, 38:39–42, 38:44–46, 40:36–46, Fig. 44). Petitioner’s annotated versions of Figure 44 of the ’686 patent and Nevo’s Figure 1 are reproduced below. *Id.* at 30.

⁹ At this stage in the proceeding, we do not decide whether the preamble of claim 11 is limiting.



On the left, Figure 44 of the '686 patent illustrates universal platform sub-modules (UPSM) 4102, control module 4112, and transceivers 4016a/n, with a red annotation added by Petitioner. Pet. 29–30 (citing Ex. 1001, 39:56–65). On the right, Figure 1 of Nevo displays a wireless device 100, with controller managers 106a and 106b, and transceivers 102a and 102b, with a red annotation added by Petitioner. *Id.* at 27–30 (citing Ex. 1004, 3:28–38). Petitioner specifically compares the '686 patent's UPSM 4102 comprising “transceivers 4106a/n and control module 4112” to Nevo's controller managers 106a/106b and transceivers 102a/102b. *Id.* at 29–30 (citing Ex. 1001, 38:39–42, 38:44–46, 40:36–52, Fig. 44; Ex. 1004, 3:39–41, Fig. 1).

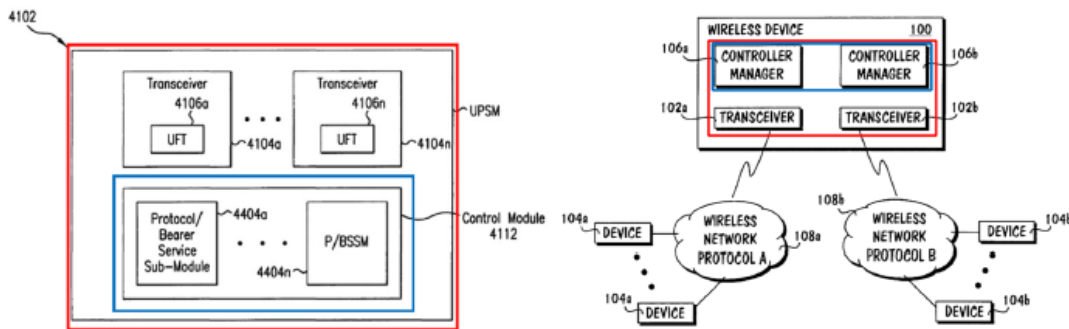
Patent Owner does not specifically respond to this contention. *See generally* Prelim. Resp. Based on our review of the current record, at this stage of the proceeding, we determine that the information presented supports sufficiently Petitioner's assertions as to this limitation.

c) Limitation [11.2]: using a control module

Petitioner contends that the claimed “control module” can be mapped in two ways, each satisfying this limitation. Pet. 31. Petitioner contends that Nevo's plurality of controller managers 106a/106b teach a “control module” because they “control wireless transceivers 102a/102b.” *Id.* at 30 (citing

Ex. 1004, 3:39–41, Figs. 1, 3, 5, 7, 11a, 13). Alternatively, Petitioner contends that controller managers 106a/106b in combination with “state machine 700, register 702, time-sharing manager 704, and workload monitor 706” teach a “control module” because all the listed parts collaborate to “control the operation of each respective transceiver.” *Id.* at 30–31 (citing Ex. 1004, 6:34–57, Fig. 7; Ex. 1002 ¶ 110).

According to Petitioner, Nevo’s control module teaching mirrors the ’686 patent. Pet. 32. Petitioner’s annotated versions of Figure 44 from the ’686 patent and Figure 1 of Nevo are reproduced below. *Id.*

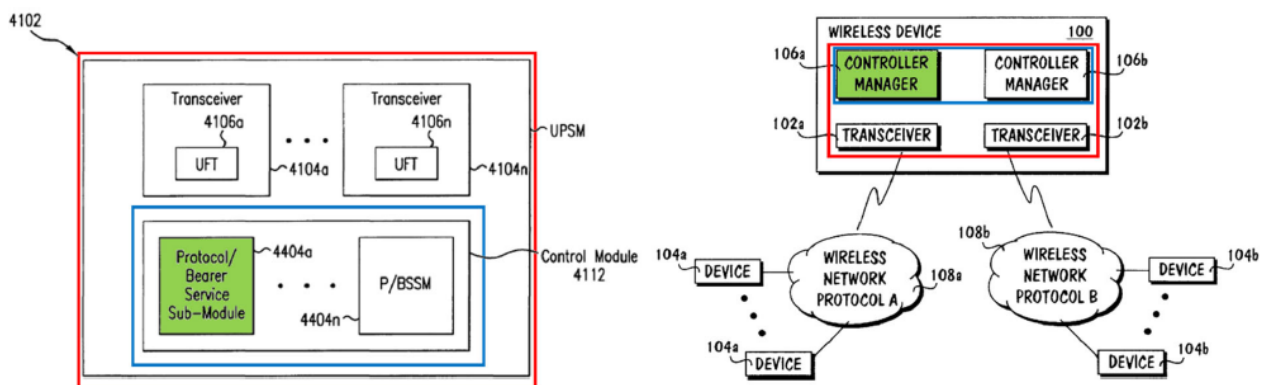


On the left, Figure 44 of the ’686 patent illustrates universal platform sub-modules (UPSM) 4102, control module 4112, and transceivers 4016a/n, with red and blue annotations added by Petitioner. *Id.* (citing Ex. 1001, 39:56–65). On the right, Figure 1 of Nevo displays wireless device 100, with controller managers 106a and 106b, and transceivers 102a and 102b, with red and blue annotations added by Petitioner. *Id.* (citing Ex. 1004, 3:28–38). Petitioner specifically compares the ’686 patent’s control module 4112 “which has protocol/bearer service submodules [(P/BSSM)]4404a/n” (above left, outlined blue) to Nevo’s “several controller modules 106a/106b” (above right, outlined blue). *Id.* (citing Ex. 1001, 38:39–42, 38:44–46, 40:36–52, Fig. 44; Ex. 1004, 3:39–41, Fig. 1).

Patent Owner does not specifically respond to these contentions. *See generally* Prelim. Resp. Based on our review of the current record, at this stage of the proceeding, we determine that the information presented supports sufficiently Petitioner’s assertions as to this limitation.

d) Limitation [11.3]: having a plurality of standard/protocol sub-modules, wherein the at least one multi-platform module includes

Petitioner contends that Nevo teaches this limitation because controller managers 106a/106b control their respective transceivers to connect two separate networks 108a/108b “in accordance with their respective protocols.” Pet. 33 (citing Ex. 1004, 4:1–5, 4:46–55, Fig. 1). Petitioner further contends that Nevo teaches this limitation similar to how the ’686 patent describes it. *Id.* Petitioner’s annotated versions of Figure 44 from the ’686 patent and Figure 1 of Nevo are reproduced below. *Id.*



On the left, Figure 44 of the ’686 patent illustrates UPSM 4102, control module 4112 that contains P/BSSM 4404a/4404n, and transceivers 4016a/4016n, with blue, red, and green annotations added by Petitioner. *Id.* (citing Ex. 1001, Fig. 44). On the right, Figure 1 of Nevo displays a wireless device 100, with controller managers 106a and 106b, and transceivers 102a and 102b, with blue, red, and green annotations added by Petitioner. *Id.*

(citing Ex. 1004, Fig. 1). Petitioner compares P/BSSM 4404a in Figure 44 of the '686 patent (above left, shaded green) and controller manager 106a in Figure 1 of Nevo (above right, shaded green). *Id.* (citing Ex. 1001, 38:39–42, 38:44–46, 40:36–52, Fig. 44; Ex. 1004, 3:39–41, 4:46–55, Fig. 1).

Patent Owner does not specifically respond to these contentions. *See generally* Prelim. Resp. Based on our review of the current record, at this stage of the proceeding, we determine that the information presented supports sufficiently Petitioner's assertions as to this limitation.

e) Limitation [11.4]: a plurality of transceivers each having at least one frequency translation module, wherein said at least one frequency translation module comprises

Petitioner contends that the combination of Nevo and Avitabile teaches this limitation. Pet. 34. Petitioner contends that Nevo's Figure 1 discloses a plurality of transceivers. *Id.* (citing Ex. 1004, 3:28–35). Petitioner asserts that, although Nevo's Figure 1 does not explicitly include a frequency translation module ("FTM") in transceivers 106a and 106b, a person of ordinary skill in the art would have found it obvious to include FTMs in light of Nevo's own teachings as well as Avitabile's teachings. *Id.* (citing Ex. 1002 ¶¶ 116–119).

Petitioner contends that Avitabile teaches an FTM by disclosing a "down-converter that translates an RF input signal to an output [intermediate frequency ('IF')] signal," and that a person of ordinary skill in the art would have found it obvious to include FTMs in Nevo's transceivers. Pet. 34–36 (citing Ex. 1006, 337 (Abstract), Figs. 1–2; Ex. 1004, 4:46–55, 10:40–45; Ex. 1002 ¶¶ 116–119).

Patent Owner does not specifically respond to these contentions. *See generally* Prelim. Resp. Based on our review of the current record, at this

stage of the proceeding, we determine that the information presented supports sufficiently Petitioner's assertions as to this limitation.

f) Rationale to Combine Nevo and Avitabile

Petitioner contends that a “[a person of ordinary skill in the art] would have been motivated to include an FTM as taught in Avitabile in each of Nevo’s transceivers.” Pet. 36 (citing Pet. § VIII.A.3). Petitioner contends that “Nevo’s transceivers are for Bluetooth and IEEE 802.11,” and that a person of ordinary skill in the art would have understood that both protocols “required down-conversion in their receivers to obtain a baseband signal.” *Id.* at 35 (citing Ex. 1004, 4:45–50; Ex. 1002 ¶ 118).

Petitioner contends that Nevo “acknowledges down-converters are needed (as was known for Bluetooth/IEEE 802.11), but does not provide the particular circuitry for performing down-conversion.” Pet. 25 (citing Ex. 1004, Fig. 12; Ex. 1002 ¶ 94). Petitioner further contends “[t]he known need for down-converters for Nevo’s disclosed protocols would have motivated a [person of ordinary skill in the art] to look to references that provide the circuit level detail for down-converters such as Avitabile describes.” *Id.* (citing Ex. 1006, Abstract; Ex. 1002 ¶ 94). Petitioner asserts that Avitabile specifically provides circuitry for down-conversion in the s-band frequency range, which is in the range of Bluetooth/IEEE802.11 (2.4 GHz). *Id.* at 25–26 (citing Ex. 1006, Abstract; Ex. 1002 ¶ 94). According to Petitioner, a person of ordinary skill in the art would have been motivated to look to down-converters in the range of frequency needed, and would have been motivated to combine Avitabile’s teachings with Nevo, with a reasonable expectation of success. *Id.* at 26 (citing Ex. 1006, Figs. 6, 7; Ex. 1002 ¶¶ 94–99).

On the current record, we are persuaded that Petitioner provides adequate reasoning, with rational underpinning, why an ordinarily skilled artisan would have combined Avitabile's FTM with Nevo's transceivers in the manner proposed by Petitioner.

g) Limitation 11[FTM-1.1]: a switch

Petitioner contends that the combination of Nevo and Avitabile teaches this limitation. Pet. 36. Petitioner contends that Avitabile teaches an FTM that includes a switch "modeled as an ideal switch." *Id.* (citing Ex. 1006, Fig. 2, 338 (§ 2)). Petitioner annotates Avitabile's Figure 2 with a blue circle around a circuit (reproduced below) that Petitioner contends is the claimed "switch." *Id.* at 37.

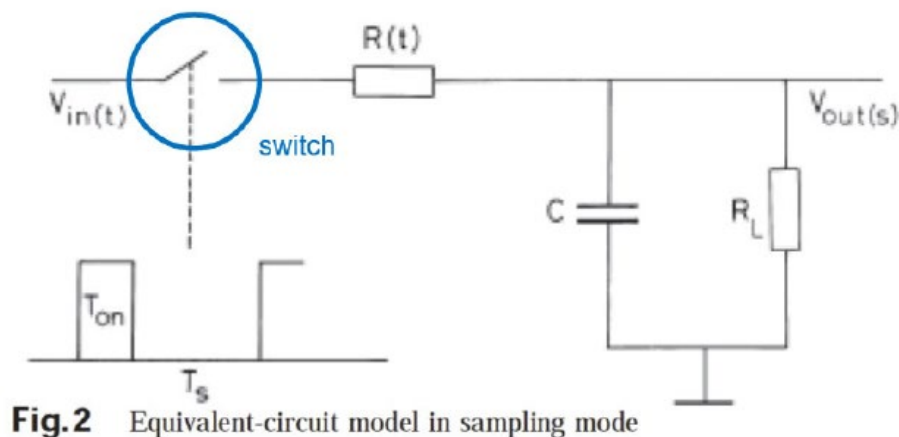


Figure 2 of Avitabile, with Petitioner's annotations, illustrates a circuit diagram showing an "equivalent-circuit model in sampling mode." Ex. 1006, 338.

Patent Owner does not specifically respond to these contentions. *See generally* Prelim. Resp. Based on our review of the current record, at this stage of the proceeding, we determine that the information presented supports sufficiently Petitioner's assertions as to this limitation.

h) Limitation 11[FTM-1.2]: configured to operate according to an energy transfer signal

Petitioner contends that the combination of Nevo and Avitabile teaches this limitation. Petitioner contends that Avitabile's Figure 2 (reproduced below) shows how "control signal T_s (annotated purple below) controls when the energy is transferred via the switch, i.e., turned on (T_{on})."

Pet. 37 (citing Ex. 1006, 338 (§ 4.1), Figs. 2, 4, 8, 9).

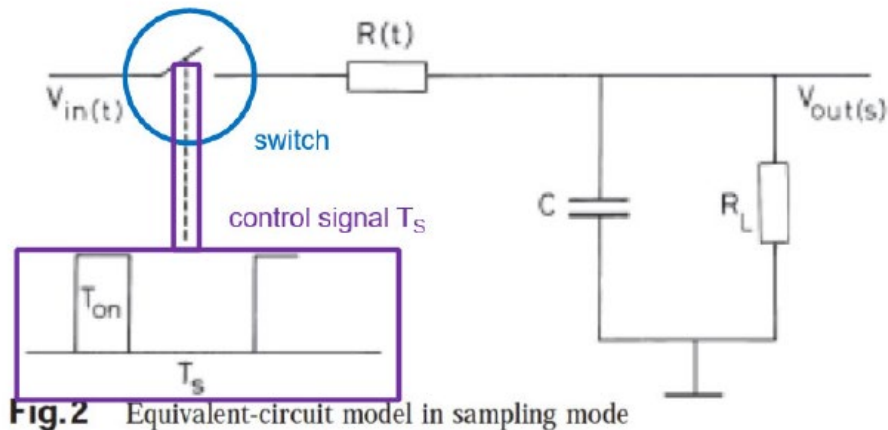


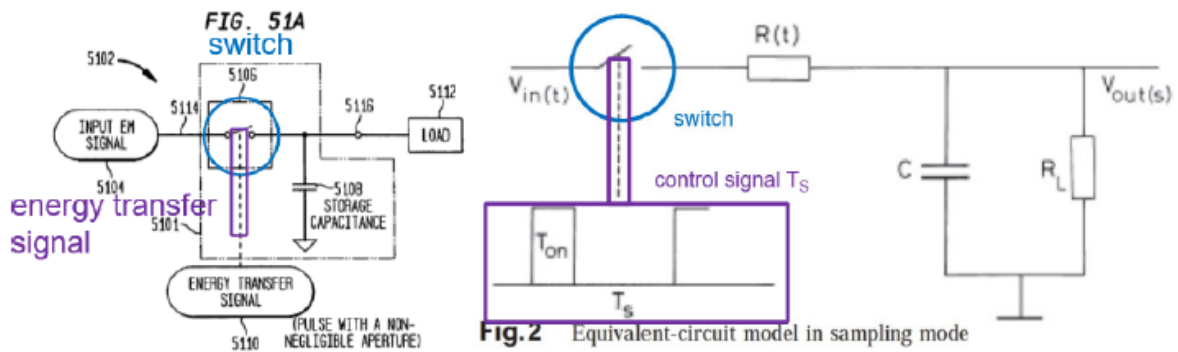
Figure 2 of Avitabile, with Petitioner's annotations, illustrates a circuit diagram showing an "equivalent-circuit model in sampling mode."

Ex. 1006, 338. Petitioner asserts that a person of ordinary skill in the art "would have understood that Avitabile's control signal T_s controls the transfer of energy and thus teaches an 'energy transfer signal.'" *Id.* at 38 (citing Ex. 1002 ¶¶ 126–128).

Petitioner further points to Avitabile's example where a switch's time on (T_{on}) is 100 picoseconds. Pet. 38 (citing Ex. 1006, 339, 341 (§ 5.2), 340 (§ 4.1)). Petitioner contends that a person of ordinary skill in the art would have understood that, during the on time, $V_{in(t)}$ would charge capacitor C shown in Figure 2. *Id.* (citing Ex. 1002 ¶ 126). Petitioner contends that a person of ordinary skill in the art "would have thus understood Avitabile's

switch controls the transfer of energy and the switch's control teaches an 'energy transfer signal.'" *Id.* (citing Ex. 1002 ¶¶ 126–128).

According to Petitioner, the '686 patent "depicts the energy transfer signal in the same way as Avitabile's control signal T_s ." Pet. 38. Petitioner references annotated versions of Figure 51A from the '686 patent (reproduced below left) and Figure 2 of Avitabile (reproduced below right). *Id.* at 39.



On the left, Figure 51A of the '686 patent depicts a circuit diagram illustrating gated transfer module 5101 with blue and purple annotations added by Petitioner. Ex. 1001, 18:2–3. On the right, Figure 2 of Avitabile illustrates a circuit diagram showing an "equivalent-circuit model in sampling mode" with blue and purple annotations added by Petitioner. Ex. 1006, Fig. 2. Petitioner contends that both figures depict "a switch (blue) that is controlled via a signal (purple) to close and pass the signal to a capacitor." Pet. 38–39.

Patent Owner does not specifically respond to these contentions. *See generally* Prelim. Resp. Based on our review of the current record, at this stage of the proceeding, we determine that the information presented supports sufficiently Petitioner's assertions as to this limitation.

- i) *Limitation 11[FTM-1.3]: and to sub-sample and transfer energy from a first electromagnetic (EM) signal, and*

Petitioner contends that the combination of Nevo and Avitable teaches this limitation. Petitioner contends that, “when Avitable’s switch is on, it allows the signal to flow to the capacitor (thereby transferring energy).” Pet. 39. Petitioner further contends Avitable’s T_{on} describes “the switch’s aperture time, [and a person of ordinary skill in the art] would have understood, during T_{on} , the switch allows transfer of energy from the input ($V_{in(t)}$) (‘first EM signal’) to capacitor C.” *Id.* (citing Ex. 1006, Fig. 2; Ex. 1002 ¶¶ 131–132). Petitioner includes an annotated version of Avitable’s Figure 2, reproduced below. *Id.* at 40.

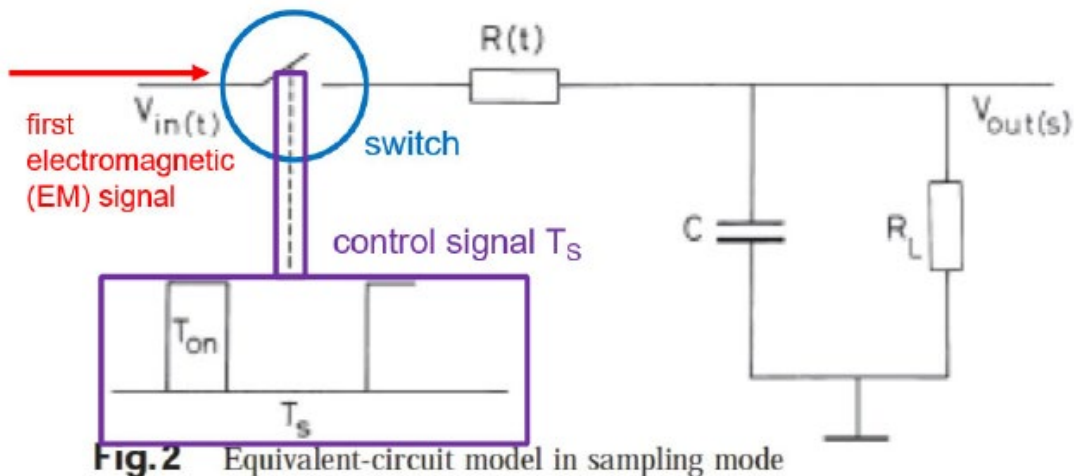


Figure 2 of Avitable illustrates a circuit diagram showing an “equivalent-circuit model in sampling mode,” with blue, purple, and red annotations added by Petitioner. Ex. 1006, Fig. 2.

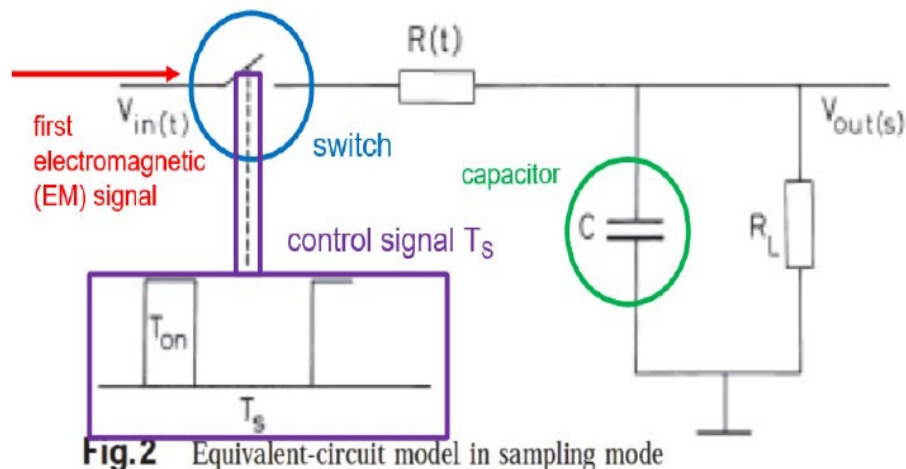
Petitioner contends that Avitable’s switch teaches “sub-samples” under the plain and ordinary meaning of the term as well as under the particular construction proposed by Patent Owner in prior litigation: “sampling at an aliasing rate, i.e., at a rate that is less than or equal to twice the frequency of the signal being sampled.” Pet. 40 (citing Ex. 1002 ¶ 130).

Petitioner provides two examples. First, Petitioner contends that Avitable provides a sampling interval T “that is related to the RF input-waveform bandwidth B through a positive integer k ,” where integer k can be no lower than 1. *Id.* (citing Ex. 1006, 338 (§ 28)). Petitioner contends that, “when k is one or two, Avitable’s sampling interval T is ‘less than or equal to twice the frequency of the signal being sampled.’” *Id.* (citing Ex. 1002 ¶ 130). Second, Petitioner contends that Avitable teaches “sampling at 249.85 MHz for an input signal of 1 GHz,” which would be “less than twice” the sampling frequency. *Id.* (citing Ex. 1006, Figs. 5, 10). Petitioner argues that a person of ordinary skill in the art “would have understood these examples to teach sub-sampling.” *Id.* (citing Ex. 1002 ¶ 130).

Patent Owner does not specifically respond to these contentions. *See generally* Prelim. Resp. Based on our review of the current record, at this stage of the proceeding, we determine that the information presented supports sufficiently Petitioner’s assertions as to this limitation.

j) Limitation 11[FTM-2.1]: a storage module coupled to said switch and configured to store said transferred energy

Petitioner contends that the combination of Nevo and Avitable teaches this limitation because “Avitable teaches a hold capacitor, which stores transferred energy from the input signal ($V_{in(t)}$).” Pet. 41 (citing Ex. 1006, Fig. 2 (capacitor C), Fig. 4 (capacitor C_H in prototype 1), Figs. 8, 9 (capacitor C_{hold} in prototype 2), 338–39 (§ 4.1), 340 (§ 5.1); Ex. 1002 ¶ 135). Petitioner’s annotated version of Avitable’s Figure 2 is reproduced below. *Id.* at 44.



Petitioner asserts that “capacitor C (green) will store charge (transferred energy from $V_{in(t)}$ (red)) with time when the switch (blue) is closed.”

Pet. 41–42 (citing Ex. 1006, Figs. 4, 7; Ex. 1002 ¶ 135). According to Petitioner, Avitable makes clear that the energy stored is non-negligible and is energy transferred from the input to the capacitor. *Id.* at 42 (citing Ex. 1006, 338–39 (§ 4.1), Figs. 4, 7; Ex. 1002 ¶¶ 135–138).

Petitioner asserts that the ’686 patent “explains that a system is an ‘energy transfer module’ when the control signal has a ‘non-negligible aperture’ and thus becomes an ‘energy transfer signal.’” *Id.* (citing Ex. 1001, 13:27–31). Petitioner further asserts that the ’686 patent also “describes its capacitor as a storage module.” *Id.* at 43 (citing Ex. 1001, Fig. 51A).

Patent Owner does not specifically respond to these contentions. *See generally* Prelim. Resp. Based on our review of the current record, at this stage of the proceeding, we determine that the information presented supports sufficiently Petitioner’s assertions as to this limitation.

- k) *Limitation 11[FTM-2.2]: wherein a second EM signal is generated from said stored energy, said second EM signal having a frequency different from said first EM signal*

Petitioner contends that the combination of Nevo and Avitabile teaches this limitation. Pet. 43. Petitioner contends that Avitabile teaches a capacitor to store sub-sampled energy from the first EM signal. *Id.* at 44 (citing Ex. 1006, Fig. 2). Petitioner further contends that Avitabile discloses generating an IF signal from the energy in the storage module, which teaches a “second EM signal having a frequency different from $V_{in(t)}$ (first EM signal).” *Id.* (citing Ex. 1006, 338 (§ 3)).

Petitioner’s annotated Figure 1 from Avitabile is reproduced below. Pet. 45.

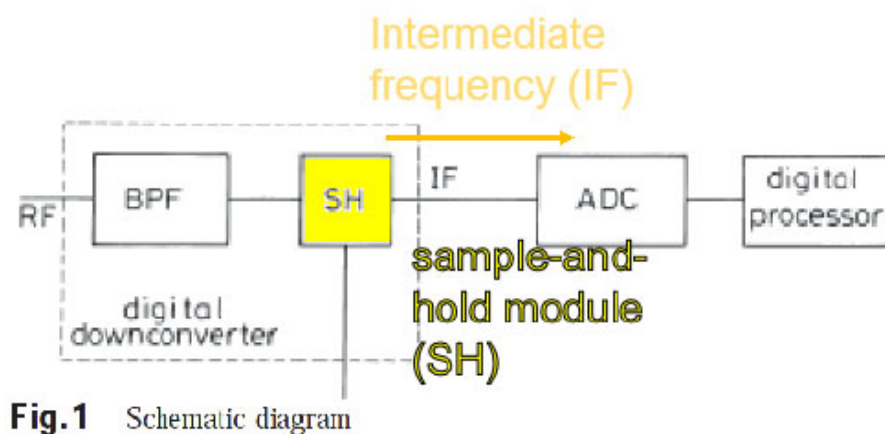


Figure 1 shows a “schematic diagram of [a] digital-downconverter” with yellow annotations added by Petitioner. Ex. 1006, 338 (§ 3). Petitioner contends that Avitabile discloses a sample-and-hold (“SH”) module that outputs an IF signal from a down-converter, which Petitioner contends a person of ordinary skill in the art would have understood to be a lower frequency signal than the RF due to the down-converting operation. Pet. 44–45 (citing Ex. 1006, Fig. 1; Ex. 1002 ¶¶ 142–145). Petitioner asserts that “Avitabile’s down-converter receives higher signals in the GHz range

for output bandwidths in the 50MHz range.” *Id.* at 45 (citing Ex. 1006, 339 (§ 5), 340 (§ 5.1), Fig. 6, 341 (§ 5.2)).

Patent Owner does not specifically respond to these contentions. *See generally* Prelim. Resp. Based on our review of the current record, at this stage of the proceeding, we determine that the information presented supports sufficiently Petitioner’s assertions as to this limitation.

l) Limitation 11[2]: (2) operating a first transceiver in conformance with a first protocol/standard combination using a first standard/protocol sub-module; and

Petitioner contends that the combination of Nevo and Avitable teaches this limitation. Pet. 45 (citing Ex. 1002 ¶¶ 146–147). Petitioner asserts that “Nevo teaches two protocols, Protocol A and B, which can be Bluetooth and 802.11.” *Id.* (citing Ex. 1004, 4:1–5, 4:46–55, Figs. 3, 5, 7, 9a, 11a, 13). Petitioner further contends that Nevo’s transceiver 102a “operates with a first protocol/standard combination (e.g., Bluetooth)” utilizing Nevo’s controller manager 106a as a “first standard/protocol sub-module.” *Id.* at 46 (citing Ex. 1004, 3:28–45). Petitioner also contends that Avitable teaches frequency down-conversion as discussed in claim limitations 11[FTM-1.1]–11[FTM-2.2], and that it would have been obvious to combine the above teachings. *Id.* (citing Pet. § IV.C.4.f).

Patent Owner does not specifically respond to these contentions. *See generally* Prelim. Resp. Based on our review of the current record, at this stage of the proceeding, we determine that the information presented supports sufficiently Petitioner’s assertions as to this limitation.

m) Limitation 11[3]: (3) operating a second transceiver in conformance with a second protocol/standard combination using a second standard/protocol sub-module.

Petitioner contends that the combination of Nevo and Avitabile teaches this limitation. Pet. 46. Petitioner contends that “Nevo teaches two protocols, Protocol[s] A and B, which can be Bluetooth and 802.11.” *Id.* (citing Ex. 1004, 4:1–5, 4:46–55, Figs. 3, 5, 7, 9a, 11a, 13). Petitioner contends that Nevo’s transceiver 102b “operates with a second protocol/standard combination (e.g., 802.11)” utilizing Nevo’s controller manager 106b as a “second standard/protocol sub-module.” *Id.* at 46–47 (citing Ex. 1004, 3:28–45). Petitioner further contends that Avitabile teaches frequency down-conversion, and it would have been obvious to combine the teachings of Nevo and Avitabile, as discussed above. *Id.* at 47 (citing Pet. §§ 11VIII.A.4.f–4.j).

Patent Owner does not specifically respond to these contentions. *See generally* Prelim. Resp. Based on our review of the current record, at this stage of the proceeding, we determine that the information presented supports sufficiently Petitioner’s assertions as to this limitation.

n) Summary as to Claim 11

For the reasons discussed above, on the present record we find that Petitioner has established that the combination of Nevo and Avitabile teaches each of the elements of claim 11, and that one of ordinary skill in the art would have been motivated to combine the teachings of these two references as proposed by Petitioner with a reasonable expectation of success in so doing.

o) Objective Indicia of Nonobviousness

In the record presently before us, neither Petitioner nor Patent Owner has presented any evidence of objective indicia of nonobviousness.

p) Weighing the Graham Factors

“Once all relevant facts are found, the ultimate legal determination [of obviousness] involves the weighing of the fact findings to conclude whether the claimed combination would have been obvious to an ordinary artisan.” *Arctic Cat*, 876 F.3d at 1361. On balance, considering the record presently before us, Petitioner has established a reasonable likelihood that it would prevail in showing that the combination of Nevo and Avitabile would have rendered the subject matter of claim 11 of the ’686 patent obvious to one of ordinary skill in the art at the time of the invention.

3. Independent Claim 1

Independent claim 1 recites limitations similar to those in independent claim 11, but recites “[a]n apparatus capable of performing simultaneous multi-platform operations.” Ex. 1001, 50:57–51:3, 51:46–52:29. Petitioner notes that claim 1 omits the “storage module” recited in claim 11. Pet. 55.

For each of the limitations of claim 1, Petitioner relies on the same arguments and evidence directed to claim 11. Pet. 55–56 (citing Pet. §§ VIII.A.4a–4d; Ex. 1002 ¶¶ 201–205). Petitioner, therefore, contends that claim 1 is unpatentable over Nevo in combination with Avitabile. *Id.* at 20.

Patent Owner does not specifically respond to these contentions. *See generally* Prelim. Resp. For the reasons discussed above with regard to claim 11, we determine that the information presented at this stage of the proceeding supports sufficiently Petitioner’s assertions as to claim 1.

On balance, considering the record presently before us, Petitioner has established a reasonable likelihood that it would prevail in showing that the combination of Nevo and Avitabile would have rendered the subject matter of claim 1 of the '686 patent obvious to one of ordinary skill in the art at the time of the invention.

4. Dependent Claims 2–10 and 12–20

Claims 2–10 depend from claim 1, and claims 12–20 depend from claim 11. Ex. 1001, 51:4–44, 52:10–59. Petitioner contends that these claims are unpatentable over the combination of Nevo and Avitabile. Pet. 47–58.

a) Claims 2 and 12

Claim 2 recites,

The apparatus of claim 1, wherein the control module is configured to enable the at least one multi-platform module to simultaneously communicate with a quantity of the plurality of communication links by employing an equal quantity of the plurality of standard/protocol sub-modules.

Ex. 1001, 51:4–8.

Claim 12 recites,

The method of claim 11, wherein step (1) comprises: controlling the at least one multi-platform module to simultaneously communicate with a quantity of the plurality of communications links by employing an equal quantity of the plurality of standard/protocol sub-modules.

Id. at 52:10–15.

Petitioner contends that Nevo discloses the additional limitations of claim 12. Pet. 47 (citing Ex. 1002 ¶¶ 150–153). Petitioner asserts that Nevo's Figure 1 "depicts a wireless device having two transceivers (102a/102b) that can connect to two separate wireless networks (108a/108b)

that are Bluetooth and IEEE 802.11.” *Id.* (citing Ex. 1004, 3:28–35, 4:46–55, Figs. 3, 5, 7, 9a, 11a, 13). Petitioner contends that Nevo’s “wireless device has control managers 106a/106b that control transceiver operations in a ‘coordinated manner’ to allow communication ‘with the respective wireless protocols at the same time.’” *Id.* (citing Ex. 1004, 3:38–45, 4:13–15, 4:36–39). Petitioner further contends that Figure 1 of Nevo depicts “one controller per network” because the figure illustrates “controller manager 106a for wireless network protocol A 108a and controller manager 106b for wireless network protocol B 108b.” *Id.* at 48 (citing Ex. 1004, Fig 1).

Petitioner asserts that “[c]laim 2 is substantively similar to claim 12, but recites ‘configured to enable’ instead of ‘controlling the at least one multi-platform module.’” Pet. 56; Ex. 1001, 51:4–8, 52:10–15. Petitioner contends that Nevo teaches “configured to enable,” as recited in claim 2 because Nevo’s “transceivers enable coupling to the device of wireless networks.” *Id.* (citing Ex. 1004, 3:30–35, claim 16; Ex. 1002 ¶ 206). Petitioner otherwise relies on the same arguments and evidence directed to claim 12. *Id.* (citing Pet. § VIII.A.5).

b) Claims 3 and 13

Claim 3 recites,

The apparatus of claim 1, wherein the at least one multiplatform module includes a plurality of receivers and a plurality of transmitters each having at least one frequency translating module.

Ex. 1001, 51:9–12.

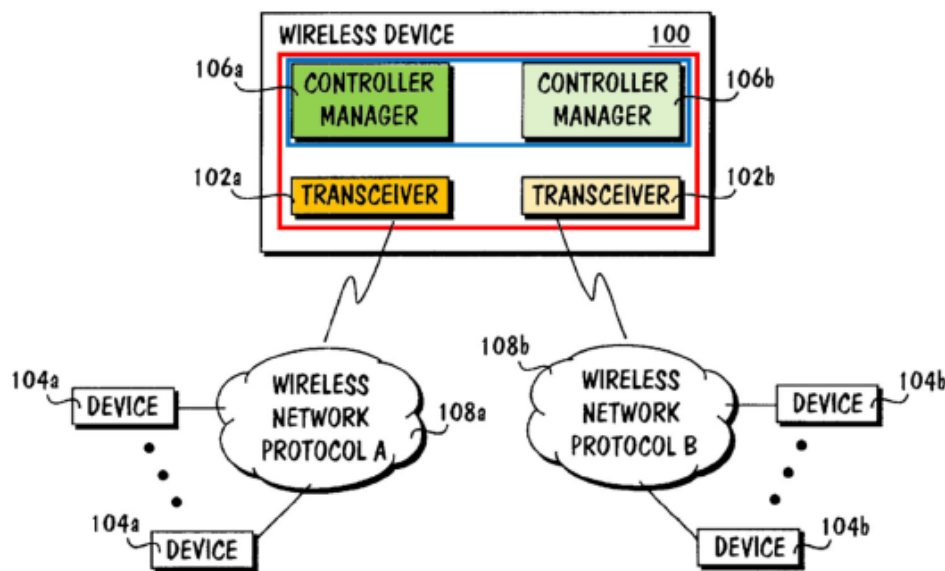
Claim 13 recites,

The method of claim 11, wherein step (1) comprises: controlling the at least one multi-platform module to communicate with at least one of the plurality of communication links using the control module, the at least one multi-platform module including a plurality of receivers and a plurality of transmitters each having at least one frequency translating module.¹⁰

Id. at 52:16–22.

Petitioner contends that the combination of Nevo and Avitabile teaches claim 13’s additional limitations. Pet. 48 (citing Ex. 1002 ¶¶ 154–156).

Figure 1 of Nevo with Petitioner’s various annotations is reproduced below. Pet. 49.



¹⁰ Petitioner contends that “[c]laim 13’s frequency translating module has the same meaning as claim 11’s frequency translation module.” Pet. 48 n.12 (citing Ex. 1002 ¶¶ 154–156). Petitioner also contends that “[c]laim 3’s frequency translating module has the same meaning as claim 11’s frequency translation module.” *Id.* at 57 n.14 (citing Ex. 1002 ¶ 207).

Petitioner contends that Nevo's Figure 1 illustrates a multi-platform module (annotated red above) and a control module (annotated blue above) containing at least controller managers 106a/106b (annotated green and light green). Pet. 48 (citing Pet. §§ VIII.A.4.b–4.d). Petitioner further asserts that

controller managers 106a and 106b, transmits and receives by wireless transceivers 102a and 102b [(orange and light orange)], in a coordinated manner, . . . to allow wireless device 100 to operate with devices 104a and devices 104b of wireless network 108a and 108b in accordance with the respective wireless communication protocols at the same time.

Id. at 48–49 (citing Ex. 1004, 3:39–45). Petitioner further contends that a person of ordinary skill in the art would have been motivated to combine the FTM from the teachings of Avitable. *Id.* at 49 (citing Ex. 1002 ¶¶ 93–99; Pet. § VIII.A.4.e).

Petitioner contends that the Nevo-Avitable combination also teaches that “Nevo's transceivers transmit and receive signals for each respective protocol,” and a person of ordinary skill in the art “would have understood that transmitting requires a transmitter and receiving requires a receiver.” Pet. 49 (citing Ex. 1004, 3:39–41, 3:49–52, 4:6–23; Ex. 1002 ¶ 156). Lastly, Petitioner contends that a person of ordinary skill in the art would have understood that Bluetooth/IEEE 802.11 transmitters and receivers require up-converters and downconverters to modulate/de-modulate a lower frequency baseband onto/from a higher frequency carrier. *Id.* at 49–50 (citing Ex. 1002 ¶ 156).

For claim 3, Petitioner relies on the same arguments and evidence directed to claim 13. Pet. 57 (citing Ex. 1002 ¶ 207).

c) Claims 4, 5, and 14

Claims 4 recites,

The apparatus of claim 1, wherein the plurality of protocol/standard sub-modules comprise a first protocol/standard sub-module configured to operate a first transceiver in conformance with a first protocol/standard combination and a second protocol/standard sub-module configured to simultaneously operate a second transceiver in conformance with a second protocol/standard combination.

Ex. 1001 at 51:13–19.

Claim 5 recites,

The apparatus of claim 4, wherein the first protocol/standard combination is different from the second protocol/standard combination.

Id. at 51:20–22.

Claim 14 recites,

The method of claim 11, wherein step (3) comprises: simultaneously operating the second transceiver in conformance with a second protocol/standard combination that is different from the first protocol/standard combination.

Id. at 52:23–27.

Petitioner contends that the combination of Nevo and Avitable teaches claim 14's additional limitations. Pet. 50 (citing Ex. 1002 ¶¶ 157–160). Petitioner contends that Nevo teaches transceiver 102a operating on a first protocol/standard (Bluetooth) using a first standard/protocol sub-module and transceiver 102b operating on a second protocol/standard (IEEE 802.11) using a second standard/protocol sub-module. *Id.* (citing Ex. 1004, 3:28–45, Fig. 1). Petitioner contends that Nevo teaches performing simultaneous multi-platform operations because it discloses a wireless device having two transceivers (102a/102b) that can

connect to two separate wireless networks (108a/108b). *Id.* at 51 (citing Ex. 1004, 3:28–35, 3:38–45, 4:13–15, 4:36–39; 4:46–55, Figs. 3, 5, 7, 9a, 11a, 13; Ex. 1002 ¶¶ 101–103, 159).

For claims 4 and 5, Petitioner relies on the same arguments and evidence directed to claim 14. Pet. 57 (citing Ex. 1002 ¶¶ 208–209).

d) Claims 6 and 15

Claim 6 recites,

The apparatus of claim 4, wherein the first and second protocol/standard sub-modules contain respective first and second implementation and operational instructions for the at least one multi-platform sub-module.¹¹

Ex. 1001 at 51:24–27.

Claim 15 recites,

The method of claim 14, wherein steps (2) and (3) comprise: programming the first and second protocol/standard submodules with respective first and second implementation and operational instructions for the at least one multi-platform sub-module.¹²

Id. at 52:28–33.

Petitioner contends that the combination of Nevo and Avitable teaches claim 15’s additional limitations. Pet. 51 (citing Ex. 1002 ¶¶ 161–169). Petitioner contends that Nevo teaches “first/second/protocol/

¹¹ We note that the “at least one multi-platform sub-module” appears to refer-back to the “multi-platform module” or to one of the multi-platform’s sub-modules because there is no “multiplatform sub-module” recited in independent base claim 1 or dependent claim 4. *See* Pet. 51 (citing Ex. 1002 ¶ 163) (discussing a similar limitation in claim 15).

¹² Petitioner notes that the “at least one multi-platform sub-module” appears to refer-back to the “multi-platform module” or to one of the multi-platform’s sub-modules because there is no “multiplatform sub-module” recited in independent base claim 11 or dependent claim 14. Pet. 51 (citing Ex. 1002 ¶ 163).

standard sub-modules . . . that provide a respective first and second implementation (e.g., Bluetooth and IEEE 802.11, respectively).” *Id.* (citing Ex. 1004, 3:28–45, 4:46–55). Petitioner further contends that a person of ordinary skill in the art “would have understood that each respective module would be programmed with implementation and operation instructions to work with each respective protocol.” *Id.* at 51–52 (citing Ex. 1002 ¶¶ 165–169; Ex. 1004, 8:14–20).

For claim 6, Petitioner relies on the same arguments and evidence directed to claim 15. Pet. 57 (citing Ex. 1002 ¶ 210).

e) Claims 7 and 16

Claim 7 recites,

The apparatus of claim 6, wherein the first and second implementation and operational instructions include respective first and second protocol stacks and specification information about the first and second protocol architectures.

Ex. 1001 at 51:28–31.

Claim 16 recites,

The method of claim 15, wherein steps (2) and (3) further comprise: programming the first and second protocol/standard submodules with respective first and second protocol stacks and specification information about first and second protocol architectures.

Id. at 52:34–39.

Petitioner contends that the combination of Nevo and Avitabile teaches claim 16’s additional limitations. Pet. 52. Petitioner contends Nevo teaches operating a first/second protocol/standard sub-modules with Bluetooth and IEEE 802.11, and a person of ordinary skill in the art would have understood these sub-modules would be programmed with information

relating to their protocol stacks and specification information to properly operate. *Id.* (citing Ex. 1002 ¶¶ 170–173).

For claim 7, Petitioner relies on the same arguments and evidence directed to claim 16. Pet. 57 (citing Ex. 1002 ¶ 211).

f) Claims 8 and 17

Claim 8 recites,

The apparatus of claim 6, wherein the first and second implementation and operational instructions can be updated, upgraded, replaced, or modified to provide the at least one multi-platform sub-module with additional functionality.

Ex. 1001 at 51:32–35.

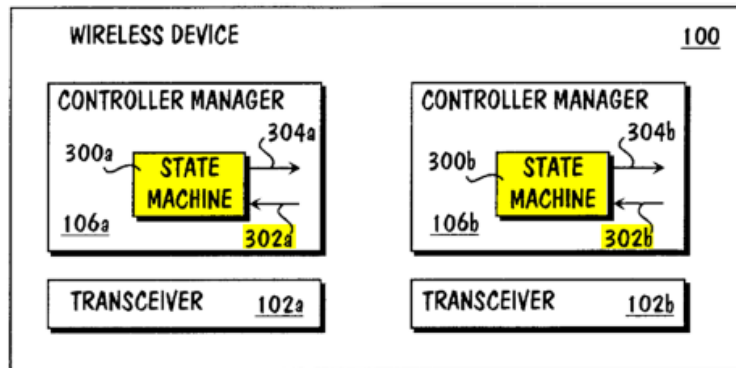
Claim 17 recites,

The method of claim 15, wherein steps (2) and (3) further comprise: updating, upgrading, replacing, or modifying the first and second implementation and operational instructions to provide the at least one multi-platform sub-module with additional functionality.

Id. at 52:40–45.

Petitioner contends that the combination of Nevo and Avitable teaches claim 17's additional limitations. Pet. 52 (citing Ex. 1002 ¶¶ 174–176). Petitioner contends Nevo teaches updating the multi-platform module (or at least one of its sub-modules) to provide additional functionality. *Id.* at 52–53.

Petitioner's annotated version of Nevo's Figure 3 is reproduced below. Pet. 53.



Nevo's Figure 3 illustrates wireless device 100 shown in Nevo's Figure 1 in block diagram format, with annotations added by Petitioner. Ex. 1004, 4:63–65. Petitioner asserts that Nevo discloses control managers that contain state machines 300a/300b (annotated yellow) that assist the controller managers in controlling each transceiver's transitions between receipt, transmit, and no-operation states. Pet. 53 (citing Ex. 1004, 4:63–5:8, 5:62–6:33). Petitioner contends that Nevo's configuration signals 302a/302b assist state machine's 300a/300b in controlling transceivers 102a/102b, and that each state machine's initial state may be set via software. *Id.* (citing Ex. 1004, 4:63–5:8, 5:62–6:33, 5:9–17). Petitioner further contends that Nevo discloses a network manager, updateable via software or jumpers, that “manages transmission and receipt states devices.” *Id.* (citing Ex. 1004, 8:5–20, 8:16–20).

For claim 8, Petitioner relies on the same arguments and evidence directed to claim 17. Pet. 57 (citing Ex. 1002 ¶ 211).

g) Claims 9 and 18

Claim 9 recites,

The apparatus of claim 4, wherein the first and second protocol/standard sub-modules are configured to operate the first and second transceivers in conformance with respective requirements of first and second protocols and operating environments.

Ex. 1001 at 51:36–40.

Claim 18 recites,

The method of claim 11, wherein steps (2) and (3) comprise: simultaneously operating the first and second transceivers in conformance with respective requirements of first and second protocols and operating environments.

Id. at 52:46–50.

Petitioner contends that the combination of Nevo and Avitable teaches claim 18’s additional limitations. Pet. 53 (citing Ex. 1002 ¶¶ 177–184, 101–103). Petitioner contends that Nevo teaches “performing simultaneous multi-platform operations” by using two transceivers that can connect to two separate wireless networks, and control managers that allow communication between wireless protocols simultaneously. *Id.* at 53–54 (citing Ex. 1004, 3:28–45, 4:13–15, 4:36–55, Figs. 3, 5, 7, 9a, 11a, 13). Additionally, Petitioner contends that a person of ordinary skill in the art “would have understood the ‘operating environments’ to encompass capability for using the respective standards, e.g., Bluetooth and IEEE 802.1, which is taught by Nevo.” *Id.* (citing Ex. 1002 ¶¶ 179–184).

For claim 9, Petitioner relies on the same arguments and evidence directed to claim 18. Pet. 57 (citing Ex. 1002 ¶ 213).

h) Claims 10 and 19

Claim 10 recites,

The apparatus of claim 9, wherein the first and second operating environments include at least one of respective standards, content encoders and decoders, and protocol gateways.

Ex. 1001 at 51:41–44.

Claim 19 recites,

The method of claim 18, wherein steps (2) and (3) further comprise: simultaneously operating the first and second transceivers in conformance with respective standards, content encoders and decoders, and protocol gateways of the first and second protocol and operating environments.

Id. at 52:51–56.

Petitioner contends that the combination of Nevo and Avitable teaches claim 19’s additional limitations. Pet. 54. Petitioner contends that claim 19 is “substantively similar to claim 18 but recites ‘content encoders, decoders, and protocol gateways.’” *Id.* Petitioner asserts that this limitation “is taught by Nevo’s discussion of Bluetooth and IEEE 802.11, which a [person of ordinary skill in the art] would have understood to have—as part of its standard—content encoders, decoders, and protocol gateways.” *Id.* (citing Ex. 1002 ¶¶ 101–103, 185–195).

For claim 10, Petitioner relies on the same arguments and evidence directed to claim 18 and 19. Pet. 57–58 (citing Ex. 1002 ¶ 214).

i) Claim 20

Claim 20 recites,

The method of claim 11, wherein step (3) comprises simultaneously operating the second transceiver and the first transceiver.

Ex. 1001 at 52:57–59.

Petitioner contends that the combination of Nevo and Avitabile teaches claim 20's additional limitation. Pet. 54 (citing Ex. 1002 ¶¶ 101–103). Petitioner contends that Nevo teaches performing simultaneous multi-platform operations with two transceivers 102a/102b that can connect to two separate wireless networks 108a/108b, and control managers 106a/106b that allow communication between wireless protocols simultaneously. *Id.* at 53–54 (citing Ex. 1004, 3:28–35, 4:46–55, Figs. 3, 5, 7, 9a, 11a, 13). Petitioner further contends that Nevo's control managers 106a/106b operate transceivers 102a/102b to allow for communication “with the respective wireless communication protocols at the same time.” *Id.* at 55 (citing Ex. 1004, 3:38–45, 4:13–15, 4:36–39).

Patent Owner does not respond to Petitioner's contentions as to claims 2–10 and 12–20. *See generally* Prelim. Resp. Based on our review and consideration of the current record, at this stage of the proceeding, we determine that the information presented sufficiently supports Petitioner's assertions that the combination of Nevo and Avitabile teaches each of the limitations of claims 2–10 and 12–20. We, therefore, determine Petitioner has established a reasonable likelihood that it would prevail in showing that the combination of Nevo and Avitabile would have rendered the subject matter of claims 2–10 and 12–20 of the '686 patent obvious to one of ordinary skill in the art at the time of the invention.

*E. Obviousness Based on Young and Estabrook
Obviousness Based on Young, Estabrook-1988, and
Estabrook-1989*

Petitioner asserts that claims 1–20 are unpatentable based on Young and Estabrook (Ground 2A). Pet. 3, 58–91. Petitioner also asserts that

claims 1–20 are unpatentable based on Young, Estabrook-1988, and Estabrook-1989 (Ground 2B). *Id.* at 3, 91–108.

Patent Owner’s Preliminary Response does not raise any argument directed to Petitioner’s Grounds 2A and 2B. *See generally* Prelim. Resp.

Because we have determined above that, at this stage of the proceeding and on the present record, the information presented in the Petition shows that there is a reasonable likelihood that Petitioner will prevail with respect to its challenge based on the combination of Nevo and Avitable (Ground 1), we need not address, in this Decision, Petitioner’s additional challenges (Grounds 2A and 2B). 37 C.F.R. § 42.108(a).

IV. CONCLUSION

For the reasons discussed above, we do not exercise our discretion to deny institution. Additionally, Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that at least one claim of the ’686 patent is unpatentable. Our analysis is based on the preliminary record developed thus far and may change after the record is developed fully, during trial.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is instituted for claims 1–20 of the ’686 patent on the unpatentability grounds asserted in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, which commences on the entry date of this Decision.

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Patent 7,483,686 B2

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