

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICROSOFT CORP., DELL TECHNOLOGIES INC., and DELL INC.,
Petitioners,

v.

OZMO LICENSING LLC,
Patent Owner.

Case No. IPR2023-01060
U.S. Patent No. 8,599,814

PATENT OWNER PRELIMINARY RESPONSE

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I. INTRODUCTION

Patent Owner Ozmo Licensing LLC (“Patent Owner”) respectfully submits this Preliminary Response in accordance with 35 U.S.C. § 313 and 37 C.F.R. § 42.107, responding to the Petition for *Inter Partes* Review (the “Petition”) filed by Microsoft Corporation, Dell Technologies Inc., and Dell Inc. (collectively, “Petitioners”) challenging Claims 1-13 (“the challenged claims”) of U.S. Patent No. 8,599,814 (the “’814 Patent”).

This Preliminary Response focuses on two claim elements that simply are not met by any of the proposed grounds for unpatentability. Patent Owner does not address the numerous other arguments that Petitioners make for institution, but Patent Owner also disagrees with those arguments. However, it is unnecessary to address all of Petitioners’ arguments because the evidence set forth below clearly demonstrates that Petitioners fail to establish a reasonable likelihood that any of Claims 1-13 of the ’814 Patent is unpatentable.

For the reasons set forth more fully below, Institution should be denied.

II. THE ’814 PATENT, THE REFERENCES RELIED UPON IN THE PETITION, AND THE PROPOSED GROUNDS FOR INSTITUTION

A. U.S. Patent No. 8,599,814

The ’814 Patent discloses a method and system for integrating short-range wireless personal area networks (“WPANs”) into longer-range wireless local area networks (“WLANs”) using a hub, such that WPAN devices can become part of

the larger WLAN infrastructure by being able to send and receive data to and from the larger WLAN infrastructure via the hub. *See* Ex. 1001 at 1:25-29, 4:1-15, 5:36-64, 14:45-15:10. The hub initiates *and maintains* connections with both a device in the WLAN and a device in the WPAN, and then forwards data between a node on the WLAN and a node on the WPAN across the created and maintained connections using a wireless radio circuit. *See* Ex. 1001 at 1:25-29, 4:1-15, 5:36-64, 14:45-15:10.

An example of a WLAN is an 802.11-1999 (802.11x) network. The 802.11x standard, commonly known as “Wi-Fi,” has been widely deployed for wireless connectivity since its adoption in a variety of settings including in homes, offices, and public establishments. *See* Ex. 1001 at 1:49-52. The 802.11x protocol has two modes: ad hoc mode and infrastructure mode. *See* Ex. 1001 at 1:40-53, 2:2-4. The 802.11x standard includes 802.11b-1999 and 802.11g-2003, which are both amendments to the same 802.11-1999 standard. *See* Ex. 1019 at p. 1.

In ad hoc mode, 802.11x-compliant wireless circuits (“stations” or “STAs”), such as laptop computers, desktop computers, tablet computers, mobile phones, printers, and smart televisions, can only communicate with each other on an ad hoc basis. Devices communicating on an ad hoc basis *cannot associate* with each other, which in turn means they *cannot create and maintain* connections with one another that persist if the device falls out of ad hoc mode (for example, by entering

sleep mode, or going into the infrastructure mode described just below).

In infrastructure mode, a dedicated access point (“AP”) manages connections to and from *associated 802.11x* STAs (which are each also in infrastructure mode) in that WLAN. Specifically, the AP of such an 802.11x WLAN (in infrastructure mode) manages connections between the STAs in that WLAN, between those STAs and other STAs on other WLANs, and between those STAs and other STAs located elsewhere on the Internet. 802.11x-compliant STAs in infrastructure mode on that WLAN can communicate with each other or with STAs of other WLANs, with all such communications being routed through APs. *See* Ex. 1001 at 2:4-21.

Devices in a conventional WPAN may communicate directly without the need for an intermediary device such as an AP to manage connections. The most common example of a WPAN is a Bluetooth connection/network formed between two Bluetooth-equipped devices. *See* Ex. 1001 at 2:22-30.

Bluetooth (and other) WPAN devices operate in the same 2.4 GHz frequency band in which WLAN devices frequently operate. The coexistence of WPAN and WLAN communication protocols in a single frequency band often results in severe interference due to their varying methods of accessing the wireless medium and a lack of synchronization between them. *See* Ex. 1001 at 2:39-44. Furthermore, a device’s ability to operate in a WLAN or a WPAN may be limited

by the hardware and software it includes, as the WPAN and 802.11 WLAN require different transceiver integrated circuits and may also require different antennas.

While the disharmonious coexistence of WPANs and 802.11 WLANs had long been tolerated, there remained a need for a solution that could seamlessly integrate WPAN and WLAN communication protocols. *See* Ex. 1001 at 2:37-44, 3:29-33.

The foregoing issues made it difficult to integrate WPAN devices into WLANs, such that WPAN devices could become part of the larger WLAN infrastructure and be able to send and receive data to and from the larger WLAN infrastructure. The '814 Patent notes that the prior art efforts to address these issues were insufficient. For example, one existing approach was to use WLAN protocols in WPAN devices. But this led to power dissipation and/or low transmission rate problems, and could introduce undesirable amounts of latency in communications involving the WPAN devices. *See* Ex. 1001 at 2:45-3:14.

The '814 Patent further describes noise, linearity, and/or overhead protocol problems with integrating then-existing WPAN and WLAN networks. *See* Ex. 1001 at 3:14-28. WLANs typically operated at relatively high data rates compared to WPANs. *See* Ex. 1001 at 3:7-8. Given the difference in these rates, it was undesirable to have a STA that was associated with a slower WPAN also associated with a WLAN as a WLAN STA, because management communications between an AP and its associated STAs occur at the lowest common data rate

supported by all STAs connected to that AP, and because STAs that are also associated with WPANs only support low data rates. *See* Ex. 1001 at 3:8-14. This means such STAs impose a very low rate on the management communications flowing through the rest of the WLAN. *See* Ex. 1001 at 3:14-28. In addition, the total WLAN capacity would be significantly reduced when such slow WPAN devices are included in a WLAN because WPAN devices will occupy a disproportionate amount of transmission (and reception) time.

Furthermore, although the 802.11x standard specifies power save modes that allow forms of power savings, there was still a need to enable power save modes that were better optimized to meet the needs of WPAN devices. *See* Ex. 1001 at 3:24-28.

The '814 Patent discloses an apparatus that provides a technical solution to these unsolved technological problems by integrating a WPAN into a WLAN infrastructure using a network-enabled hub, such that WPAN devices can become part of the larger WLAN infrastructure by being able to send and receive data to and from the larger WLAN infrastructure via the hub. *See* Ex. 1001 at 3:20-33. The '814 Patent claims and teaches, *inter alia*, an improved way to facilitate communications between wireless devices that are configured to communicate indirectly via the claimed hub. The '814 Patent invention also improves upon existing wireless communications techniques, which were unable to integrate a

WPAN into a WLAN infrastructure without suffering from one or more of the aforementioned problems, by allowing the hub to initiate and maintain connections with nodes of an external wireless network via a first network connection using a first network protocol and, a second network connection using a second network protocol that is an overlay protocol with respect to the first network protocol, and that is partially consistent with the first network protocol, and by allowing the network-enabled hub to forward data between the WPAN devices and to devices connected to the WLAN. *See* Ex. 1001 at 14:45-15:10.

B. References Relied Upon in the Petition and Proposed Grounds for Institution

The Petition asserts four grounds including nine separate references: U.S. Patent Pub. No. 2002/0061031 to “Sugar” (Ex. 1004); U.S. Patent Pub. No. 2004/0071123 to “Shin” (Ex. 1005); the Bluetooth Specification (Ex. 1006); International Pub. No. WO 2005/006659 to “Sinivaara” (Ex. 1007); U.S. Patent Pub. No. 2004/0090924 to “Giaimo” (Ex. 1008); U.S. Patent Pub. No. 2005/0180368 to “Hansen” (Ex. 1009); U.S. Patent Pub. No. 2005/0174962 to “Gurevich” (Ex. 1010); IEEE 802.11b-1999 (Ex. 1018); and IEEE 802.11g-2003 (Ex. 1019).

These references are briefly described below.

1. Sugar (Ex. 1004)

Sugar discloses interference mitigation or collision avoidance systems and

procedures to allow different WPAN and WLAN communication protocols, such as Bluetooth and 802.11x, to coexist in the same frequency band. *See* Ex. 1004 at Abstract. As background, Sugar noted the existence of several wireless network protocols sharing the same unlicensed frequency spectrum, which caused interference problems between different networks, such as IEEE 802.11b and Bluetooth. *See* Ex. 1004 at ¶¶ [0003]-[0006]. Sugar teaches different interference avoidance techniques for 802.11/Bluetooth Synchronous Connection Oriented (“SCO”) transmissions and 802.11/Bluetooth Asynchronous Connectionless (“ACL”) transmissions. *See* Ex. 1004 at ¶¶ [0084], [0093]. Sugar teaches yet other interference avoidance techniques for multi-protocol devices (“MPDs”) supporting Bluetooth, 802.11b DS (Direct Sequence), and HomeRF protocols. *See* Ex. 1004 at ¶¶ [0108]-[0147]. Sugar is silent about forwarding data between any networks, let alone between devices that are part of an IEEE 802.11b WLAN and devices that are part of a WPAN (e.g., Bluetooth, HomeRF).

2. Shin (Ex. 1005)

Shin discloses an apparatus and method for allowing Bluetooth and WLAN devices to communicate with each other. *See* Ex. 1005 at Abstract. The Shin apparatus creates a mixed protocol stack having distinct Bluetooth and WLAN lower level layers, with the WLAN lower level layer only communicating with the WLAN (i.e., 802.11x) terminals, and the Bluetooth lower level layer only

communicating with the WPAN (i.e., Bluetooth) terminals. *See, e.g.*, Ex. 1005 at ¶¶ [0054]-[0055], [0064]-[0065]. Both the WLAN lower level layer and the Bluetooth lower level layer share a common higher level layer that implements an Internet Protocol Control Protocol (“IPCP”). *See* Ex. 1005 at ¶¶ [0040]-[0051]. Specifically, Shin teaches the creation of a single, undifferentiated ad hoc network (i.e., no association, as defined above, between the devices) by using a function of the IPCP to allow WLAN nodes and WPAN nodes to communicate by exchanging higher-level IP packets via the shared higher IPCP layer. *See* Ex. 1005 at ¶ [0045]; *see also* Ex. 1005 at ¶ [0060] (“establishing an ad-hoc network of Bluetooth and wireless LAN [terminals] of the present invention.”). Shin is silent as to, among other things, (i) there being a WLAN *and* a WPAN (only one network is disclosed), (ii) interoperability techniques, including data forwarding, to move data between a device that is part of a WPAN and a device that is part of a WLAN, and (iii) interference and coexistence between two distinct networks.

**3. Specification of the Bluetooth System (“Bluetooth Spec.”)
(Ex. 1006)**

Exhibit 1006 is volume 1 of the Bluetooth Specification. *See* Ex. 1006.

4. Cromer (Ex. 1022)

Cromer is directed to the “need [] for a data processing system and method that permits a server to remotely access a wireless client computer system’s asset information.” *See* Ex. 1022 at ¶ [0009]. Because of the known power

management issues involved with wireless devices at the time, Cromer introduces a method and implementation for remotely accessing data stored in a mobile data processing system when the mobile system is powered down. *See* Ex. 1022 at ¶ [0018].

5. Sinivaara (Ex. 1007)

Sinivaara is directed to a mechanism for decreasing power consumption in wireless terminals engaged in short-range, beacon-based communication. *See* Ex. 1007 at 1:4-7. Sinivaara purports to decrease power consumption by, *inter alia*, increasing the transmission rate of the header portion of wireless packets. *See* Ex. 1007 at 3:27-4:22. “By accelerating the transmission of the header contrary to the WLAN (i.e., 802.11) specifications, the processing time of the data packets can be made shorter than in the standard MAC layer.” Ex. 1007 at 7:36-8:2. “The shorter transmission intervals (i.e. shorter packet transaction intervals) obtained in this way translate to lower battery consumption, while also allowing the terminal more time for the sleep mode.” Ex. 1007 at 8:2-5. This comes at the cost of a compromise between network range and power consumption, however. *See* Ex. 1007 at 7:31-34.

6. Giaimo (Ex. 1008)

Giaimo teaches systems and methods for “Smart Wireless Routing.” *See, e.g.*, Ex. 1008 at ¶ [0015]. Using existing wireless hardware, 802.11 STAs in a

single network can form simultaneous wireless connections with an AP on a first channel in infrastructure mode, and with another STA on a different channel in ad hoc mode. *See* Ex. 1008 at ¶ [0015] (“This aspect of the present invention is clearly illustrated in a wireless network ...”). Transmissions that require higher quality of service (QoS) may be made on a channel with lower latency and higher throughput using a protocol like 802.11a or 802.11g, while transmissions that require lower QoS can be made on channels with higher latency and lower throughput using a protocol like 802.11b. *See* Ex. 1008 at ¶ [0016]. STAs in the single network of Giaimo also can serve as “surrogate” APs for other STAs, fetching data from APs to serve to the other STAs, and vice versa using two different connections non-simultaneously on two different channels. *See* Ex. 1008 at ¶ [0017]. Giaimo is silent as to, among other things, (i) there being a WLAN *and* a WPAN (only one network is disclosed), (ii) interoperability techniques, including data forwarding, to move data between a device that is part of a WPAN and a device that is part of a WLAN, and (iii) interference and coexistence between two distinct networks.

7. Hansen (Ex. 1009)

Hansen teaches methods and apparatuses that enable multiple wireless protocols to be supported within a single wireless communication network (so as to alleviate performance losses caused by devices ensuring backwards compatibility,

for example). *See* Ex. 1009 at ¶¶ [0012]-[0013]; *see also* Ex. 1009 at ¶ [0003] (“This invention relates ... more particularly to supporting multiple wireless communication protocols within a wireless local area network.”). In the single network of Hansen, devices on that network first determine the 802.11x protocols (e.g., 802.11b, 802.11a, 802.11g, or 802.11n) with which they are compatible. *See* Ex. 1009 at ¶¶ [0014]-[0017], [0050]-[0054]. If the protocols are different (e.g., one or more devices is using a legacy protocol such as 802.11b or 802.11a, and another device is using a newer protocol such as 802.11g or 802.11n), devices that wish to transmit a MAC frame will use a legacy protocol to create a “legacy portion” of a set-up PHY preamble in the MAC frame. *See* Ex. 1009 at ¶¶ [0014]-[0017], [0050]-[0054]. In this way, the other legacy devices in the vicinity that are not designated recipients of that frame will not see it as interference but rather as a frame that should be ignored. *See* Ex. 1009 at ¶¶ [0014]-[0017], [0050]-[0054]. The device will then construct the remainder of the MAC frame using its native/default protocol. *See* Ex. 1009 at ¶ [0016]. Using the legacy set-up portions ensures that legacy devices do not interfere with devices that are using newer versions of 802.11, by forcing the newer devices to use legacy protocols. *See* Ex. 1009 at ¶¶ [0012]-[0014]. Like the other references, Hansen is silent as to, among other things, (i) there being a WLAN *and* a WPAN (only one network is disclosed), (ii) interoperability techniques, including data forwarding, to move data

between a device that is part of a WPAN and a device that is part of a WLAN, and
(iii) interference and coexistence between two distinct networks.

8. Gurevich (Ex. 1010)

Gurevich teaches a “generic client” (“GC”) device capable of communicating over different networks that each follow the same protocol, such as an 802.11 infrastructure network and an 802.11 ad hoc network, using virtual network interfaces. *See* Ex. 1010 at ¶ [0013]. In one implementation, the GC provides simultaneous communication with both 802.11 infrastructure and 802.11 ad hoc networks in compliance with the IEEE 802.11 protocol. *See* Ex. 1010 at ¶ [0013]. Gurevich is silent as to, among other things, interference and coexistence between 802.11 infrastructure and 802.11 ad hoc networks.

9. 802.11b/g Specifications (Exs. 1018-19)

802.11b is an amendment to the 802.11-1999 standard titled “802.11 Higher-Speed Physical Layer Extension in the 2.4 GHz Band.” 802.11g is an amendment to the 802.11-1999 standard titled “Further Higher Data Rate Extension in the 2.4 GHz Band.” *See* Ex. 1018 at p. 1; Ex. 1019 at p. 1.

C. Proposed grounds of institution

The proposed grounds are summarized in the table below:

GROUND	CLAIM(S)	BASIS	REFERENCES
1	1, 3, 5-7, 9-13	35 U.S.C. § 103	Sugar, Shin, and Bluetooth
2	2	35 U.S.C. § 103	Sugar, Bluetooth, Shin, and Cromer
3	1, 4, 7-8	35 U.S.C. § 103	Giaimo and Sinivaara
4	1	35 U.S.C. § 103	Gurevich, Hansen, 802.11-1999, 802.11b, and 802.11g

III. THE CHALLENGED INDEPENDENT CLAIM

Claims 1-13 are being challenged. Claim 1, the only independent claim being challenged, reads as follows:

1. A network-enabled hub, usable for facilitating data communications between two or more wireless devices that are configured to communicate indirectly with each other via the network-enabled hub, comprising:
 - an interface to a wireless radio circuit that can send and receive data wirelessly, providing the hub with bi-directional wireless data communication capability;
 - logic for processing data received via the wireless radio circuit;
 - logic for generating data to be transmitted by the wireless radio circuit;
 - logic for initiating and maintaining wireless network connections with nodes of a wireless network external to the network-enabled hub, maintaining at least a first wireless network connection using a first wireless network protocol and a second wireless network connection using a second wireless network protocol, that can be maintained, at times, simultaneously with each other in a common wireless space, wherein the second wireless network protocol is an overlay protocol with respect to the first wireless network protocol in that communications using the second wireless network protocol are partially consistent with the first wireless network protocol and at least some of the communications using

the second wireless network protocol impinge on at least some antennae used for the first wireless network; and
data forwarding logic, implemented in the network-enabled hub using hardware and/or software, that forwards data between an originating node and a destination node, wherein the originating node is a node in one of the first and second wireless networks and the destination node is a node in the other of the first and second wireless networks.

IV. **CLAIM CONSTRUCTION**

A. **Claim Construction Standard**

In an *inter partes* review proceeding, claim terms are construed according to the same claim construction standard used in district courts as articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*).

B. **“overlay protocol”**

While Petitioners disingenuously assert that the “Court in the Dell litigation construed certain terms, *which constructions are also applied*” (Pet. at 8 (emphasis added)), Petitioners in fact implicitly propose a construction of “overlay protocol” that was *explicitly rejected* by the Court. For example, in the course of arguing the Ground 1 combination of Sugar, Shin, and Bluetooth, Petitioners aver that “[t]he Bluetooth protocol in the combination is an overlay protocol with respect to 802.11 in that communications using the Bluetooth protocol are partially consistent, but not entirely consistent, with the 802.11 protocol.” Pet. at 23. This is without merit. That two different protocols may be “partially consistent” in some way does

not in itself make one an overlay of the other under the Court’s claim construction—which Petitioners purport to follow. The Court in the Dell litigation construed “overlay protocol” as “a protocol governing a second network, which protocol has aspects in common with a first network protocol *to reduce interference such that the second and first networks can co-exist.*” See Ex. 1035 at p. 1 (emphasis added).

Bluetooth simply cannot be such an overlay protocol of 802.11 because of the well-known interference problems caused when a Bluetooth WPAN occupies the same physical medium as an 802.11 network, as documented in the section describing previous known systems of the ’814 Patent itself. Not only is Bluetooth not an overlay protocol of 802.11; it is the very antithesis of an overlay protocol because its presence *increases* interference between the Bluetooth and 802.11 networks. See Ex. 1001 at 2:39-43. In *no way* does Bluetooth have any aspect in common with Wi-Fi, which aspect reduces interference when they are made to co-exist. As explained further *infra*, Petitioners’ reasons in support of their contention to the contrary are false.

Moving to another argument Petitioners make about Sugar’s alleged overlay protocol, the fact that both 802.11 and Bluetooth use a common IEEE 48 address space and may operate in the same 2.4 GHz band does not make one an overlay protocol of the other as construed by the Court because an address has nothing to

do with interference or co-existence. The Court set forth its reasoning for the above construction in the case of *Ozmo Licensing LLC v. Acer Inc. and Acer America Corp.* (No. 6:21-cv-1225-ADA), where it had previously construed the term. *See* Ex. 1015 at pp. 23-26. As can be seen therein, the Court’s reasoning in support of its construction was rigorous and thoughtful, and also cut against a position advanced by Dell that would have let it place Bluetooth within the scope of the “overlay protocol”—for example, when Dell argued an overlay protocol is, *inter alia*, simply “a second protocol that has elements that are reuses of a first protocol.” *See*, e.g., Ex. 1036 at p. 6. The Board should therefore adopt the Court’s actual construction, not Petitioners’ implicit modification of the Court’s construction. The Board should also recognize that Petitioners are deceptively attempting to diverge from the Court’s claim construction—despite paying lip service to it—by resurrecting a proposed construction that the Court explicitly rejected; like the Court, the Board should reject that same construction. *See Kiosoft Techs., LLC v. PayRange, Inc.*, IPR2021-00086, Paper 12 at 16 (PTAB Mar. 22, 2021) (The Board refusing to adopt the petitioner’s proposed claim construction because doing so risked undermining the predictability of the claims of the subject patent and the integrity of the patent system).

Patent Owner submits that no other terms need be construed.

**V. THE PETITION DOES NOT ESTABLISH A REASONABLE
LIKELIHOOD THAT ANY OF CLAIMS 1-13 OF THE '814 PATENT
IS UNPATENTABLE**

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity ... the evidence that supports the grounds for the challenge to each claim”).

Petitioners have failed to meet their burden, as described more fully below.

**A. Ground 1 should be denied for failure to establish a reasonable
likelihood that the alleged combination of Sugar, Shin, and Bluetooth
renders Claims 1, 3, 5-7, or 9-13 unpatentable.**

- 1. The alleged combination fails to disclose or render obvious the Claim 1 limitation of: “wherein the second wireless network protocol is an overlay protocol with respect to the first wireless network protocol”**

Claim 1 requires, *inter alia*, “wherein the second wireless network protocol is an overlay protocol with respect to the first network protocol” Ex. 1001 at 14:63-65. To meet this claim element, Petitioners aver that “[t]he Bluetooth protocol in the combination is an overlay protocol with respect to 802.11 in that communications using the Bluetooth protocol are partially consistent, but not entirely consistent, with the 802.11 protocol.” Pet. at 23. As discussed above, this is without merit. *See supra*. That two different protocols may be “partially

consistent” in some way does not by itself make one an overlay of the other as construed by the Court. *See supra*. It also highlights the unreasonableness of Petitioners’ proffered construction of “overlay protocol”: if Bluetooth can be an overlay of 802.11, despite the well-known interference problems caused when a Bluetooth network operates in the vicinity of an 802.11 network (as explained *infra*), then any protocol that shares any common elements with another can be said to be an “overlay protocol”—thus conflicting with the Court’s far narrower construction (i.e., which has further limitations relating to interference and coexistence). The baseless nature of Petitioners’ position that Bluetooth is an overlay protocol relative to 802.11, as that term is used in the ’814 Patent, also flies in the face of the ’814 Patent’s instruction to *replace* WPAN protocols like Bluetooth with an 802.11 overlay protocol because of the “severe interference” that results when devices implementing Bluetooth are made to coexist with devices implementing 802.11x. *See* Ex. 1001 at 2:21-47, 3:35-4:21. The lack of merit of Petitioners’ position that Bluetooth is an overlay protocol is further compounded by the facts that the two protocols are incompatible in their physical medium access technology (TDMA using time slots with frequency hopping versus CSMA/CA access at will if the channel is free), and importantly, that the two protocols require two completely different radios (one for Bluetooth and one for 802.11). *See* Ex. 1012 at 3:64-4:3.

The '814 Patent makes clear that an overlay protocol has aspects in common with an existing protocol, which aspects reduce interference between two wireless networks such that they can co-exist. *See* Ex. 1001 at 10:1-7. That is, the '814 Patent introduces a secondary wireless network ("SWN," which may be a WPAN) protocol that is an overlay of a primary wireless network ("PWN," which may be a WLAN) protocol in that aspects they share in common reduce interference between the two networks when operating in the same vicinity. *See* Ex. 1001 at 9:60-10:9. In disclosed embodiments, the primary wireless network may be an 802.11 network, and the secondary wireless network protocol may be an overlay of the 802.11 network protocol. *See* Ex. 1012 at 4:46-61.¹ "The overlay protocol is preferably such that devices that can join both networks can use a common network interface circuit." *See* Ex. 1012 at 4:59-61.²

The '814 Patent discusses Bluetooth in the context of WPAN networks that existed at the time. *See* Ex. 1001 at 2:22-35. But it does not state or even suggest that the Bluetooth protocol is an overlay of the 802.11 protocol. *See* Ex. 1001; Ex. 1012. Moreover, the '814 Patent identifies the problem of "severe interference"

¹ U.S. Patent No. 9,036,613, which names the same inventors and was filed on the same day as the '814 Patent, was also incorporated by reference into the '814 Patent. *See* Ex. 1001 at 1:18-21.

² At the time, Wi-Fi and Bluetooth used different network interface circuits. *See* Ex. 1012 at 3:64-4:3.

between WPAN networks (such as Bluetooth networks) and 802.11 networks when “made to co-exist.” Ex. 1001 at 2:37-44. This problem was well known in the art at the time. For example, Petitioners’ primary reference, Sugar, itself identifies the problem. *See* Ex. 1004 at ¶¶ [0004]-[0006]. In fact, Sugar is explicitly directed to ameliorating coexistence problems between Wi-Fi and Bluetooth. *See* Ex. 1004 at ¶ [0066]. Notably, and importantly, Sugar does *not* ameliorate coexistence problems using any aspects of the Bluetooth protocol that are common with the 802.11x protocol, which means there is no “overlay protocol” as construed by the Court. And the Petition does not aver that Bluetooth has aspects that are common with 802.11x *and reduce interference such that the second and first networks can co-exist*. *See* Ex. 1004.

For its part, Shin also does not disclose any overlay protocol at all. *See* Ex. 1005. And the Petition dares not state that it does. *See* Pet. at 22-25.

Finally, the Bluetooth specification does not describe the Bluetooth protocol as an overlay of anything, let alone 802.11. *See* Ex. 1006. And aside from the declaration of their retained expert, Petitioners cannot cite to a single reference that describes or even suggests that the Bluetooth protocol is an overlay of any other protocol.

In the face of this strong evidence that the Bluetooth protocol is the very antithesis of an overlay of the 802.11 protocol, Petitioners offer two alleged Sugar

modifications of the Bluetooth protocol that are allegedly each an overlay of the 802.11 protocol: (1) “the Bluetooth protocol is modified by adding a rule that DIFS from 802.11 should be used to reduce collisions” and (2) “the Bluetooth protocol is modified by adding CTS/RTS ‘guard packets’ from 802.11 to reduce collisions.” *See* Pet. at 23. Petitioners also offer two reasons why the Bluetooth protocol itself is an overlay of the 802.11 protocol: (3) “a POSITA would have known that 802.11 and Bluetooth use a 48-bit address” and (4) “Bluetooth and 802.11 operate in consistent RF frequencies.” *See* Pet. at 24. None of these purported reasons make the Bluetooth protocol, or Sugar’s modifications thereof, an overlay of the 802.11 protocol.

As for reason (1), Petitioners argue as follows:

[T]he Bluetooth protocol is modified by adding a rule that DIFS from 802.11 should be used to reduce collisions. ... Sugar teaches that a device intending to send a Bluetooth transmission that might collide with an 802.11 transmission *should wait one DIFS period to decrease the risk of a collision.* ... *This is consistent with the 802.11 protocol that also requires waiting one DIFS period to reduce the risk of collision in these circumstances.*

Pet. at 23 (citing Ex. 1004 at ¶¶ [0095], [0107] & FIGs. 17, 19; Ex. 1017, §§ 9.2.3-5 *et seq.*) (emphasis added). Contrary to this deceptively vague argument, Sugar does not disclose a modified Bluetooth protocol that is an overlay of the 802.11 protocol as construed by the Court, because it does not disclose any modification to the Bluetooth protocol. This in turn means Sugar is disclosing nothing other

than the conventional Bluetooth and conventional 802.11 devices referenced in the Background section of the '814 Patent (*see* Ex. 1001 at 2:23-44), which, as explained *supra*, have no aspect in common that serves to reduce interference such that the second and first networks can co-exist (i.e., contrary to the Court's claim construction of an overlay protocol). Closer inspection of Sugar's MPD also reveals that it does not implement any wireless communication protocols besides the *unmodified* Bluetooth protocol and the *unmodified* Wi-Fi protocol (not to mention the unmodified HomeRF protocol, which is not addressed herein). As Figures 2, 17A, and 17B show, Sugar teaches a network access arbitration controller ("NAAC") 190 in Fig. 2 that arbitrates which of an unmodified Bluetooth terminal, an unmodified 802.11 terminal, or an unmodified HomeRF terminal is active or operational at a given time, much the way an operating system or application might arbitrate as between which of those three terminals may be operational—not by modifying any of the 802.11, Bluetooth, or HomeRF protocols, but by deciding when to activate any of the terminals implementing those protocols to transmit/receive packets. *See, e.g.*, Ex. 1004 at ¶¶ [0046], [0094]-[0106].

Specifically, the NAAC 190 gathers data from unmodified Bluetooth terminals and data from unmodified 802.11 terminals (e.g., NAAC 190 determines whether or not the 802.11 unit is idle for a period of time greater than the 802.11

DIFS—see step 420 in Fig. 17B), and uses all that data from those different unmodified wireless protocol terminals to decide when to pass along a packet for transmission to the unmodified Bluetooth terminal. *See, e.g.*, Ex. 1004 at ¶ [0094] (“if in step 400 the 802.11 network is idle and the network load is determined to be sufficiently small, the MPD in step 405 *transmits a 5-slot ACL packet immediately*” (emphasis added)); *see also id.*, FIG. 17A. With no modification of either the Bluetooth protocol or the 802.11 protocol disclosed in Sugar, one is left with the conventional Bluetooth and conventional 802.11 devices referenced in the Background section of the ’814 Patent (*see* Ex. 1001 at 2:23-44), which have no aspect in common that serves to reduce interference such that the second and first networks can co-exist. Responsibility for reducing interference in Sugar instead lies with some higher intelligence—a controller for example—that works not by relying on some aspect common to two wireless radio protocols that mitigates interference (i.e., as taught by the ’814 Patent), but rather by relying on its ability to understand the operational state of either protocol and based on that state arbitrating or deciding when to activate terminals implementing those protocols to transmit packets.

Even if it were part of a modified Bluetooth protocol (i.e., contrary to the argument of the previous paragraph), reason (1)’s Bluetooth “modification” would still not be an overlay protocol. This is because it has no aspect in common with

802.11 that serves to reduce interference such that the second and first networks can co-exist. In reason (1)'s Bluetooth "modification," Sugar's MPD considers if the 802.11 network is idle for at least a DIFS period and, under certain conditions (described in Sugar's Figures 17A and 17B), may "wait[] at least *two [Bluetooth] slots* before attempting to transmit again" Ex. 1004 at ¶ [0095] (emphasis added). This is not an aspect that is common with the 802.11 protocol. Two or more Bluetooth slots are not an 802.11x DIFS period (the amount of time 802.11 protocol waits [to determine if the channel is free] before attempting to transmit a frame), and waiting for a DIFS period to determine if an 802.11 channel is free and then under certain conditions waiting two *Bluetooth* slots before attempting to transmit again is not a behavior that is described anywhere in the 802.11 protocol. Again, all Sugar teaches is the NAAC 190 observing the state of the 802.11 network (if the 802.11 channel is busy during the DIFS) and the state of the Bluetooth network in order to determine when to send packets to the Bluetooth terminal to transmit using an unmodified Bluetooth protocol. Therefore, Sugar's Bluetooth interference mitigation algorithm has no aspects in common with 802.11.

With respect to reason (2), in an embodiment, Sugar's MPD sends CTS/RTS packets to delay 802.11 transmissions in order to send Bluetooth transmissions without interference. *See* Ex. 1004 at ¶ [0091] ("The CTS packets are understood

by 802.11 capable devices to not access the medium for a period of time.”). This is *not* describing an aspect of the Bluetooth protocol in the first place. It is describing an aspect of the 802.11x protocol. The Bluetooth protocol remains unmodified—meaning that, as explained *supra*, Sugar is disclosing nothing other than the conventional Bluetooth and conventional 802.11 devices referenced in the Background section of the ’814 Patent (*see* Ex. 1001 at 2:23-44), which have no aspect in common that serves to reduce interference such that the second and first networks can co-exist.

Reasons (3) and (4) are even more lacking in merit. The mere fact that 802.11 and Bluetooth both use 48-bit MAC addresses does not make the Bluetooth protocol an overlay of the 802.11 protocol. It is true that both 802.11 and Bluetooth use the common 48-bit IEEE address. *See* Ex. 1006 at p. 58 (“The LAP, UAP, and NAP together form the 48-bit IEEE address of the unit that sends the FHS packet.”); Ex. 1017 at p. 16 (“IEEE 802.11 has chosen to use the IEEE 802 48-bit address space.”). But a 48-bit address space has nothing to do with wireless interference and coexistence. *See* Ex. 1001 at 9:60-10:7.

Lastly, the fact that both 802.11 and Bluetooth (and many other wireless technologies that existed at the time, *see* Ex. 1001 at 2:25-35) use the 2.4 GHz unlicensed band of the spectrum does not make one an overlay protocol of the other (or any of the others), at least because it is an aspect of both protocols that

actually makes them interfere with one another and unable to co-exist with one another.

Therefore, Claim 1 is not rendered obvious by the alleged combination of Sugar, Shin, and the Bluetooth specification at least because none of the references disclose or reasonably suggest the Claim 1 limitation of “wherein the second wireless network protocol is an overlay protocol with respect to the first wireless network protocol.”

2. Dependent Claims 3, 5-7, and 9-13: the Petition fails to establish that the alleged combination discloses or renders obvious all recited claim limitations of any dependent claim.

Dependent Claims 3, 5-7, and 9-13 depend from and include all elements of independent Claim 1. Petitioners rely entirely on the arguments presented for Claim 1 in substantiating their position as to the alleged unpatentability of dependent Claims 3, 5-7, and 9-13. Thus, for at least the reasons described above with respect to Claim 1, Petitioners have failed to meet their burden in demonstrating that any of Claims 3, 5-7, and 9-13 are rendered unpatentable based on the alleged combination of Sugar, Shin, and the Bluetooth specification. *See Comaper Corp. v. Antec, Inc.*, 596 F.3d 1343 (Fed. Cir. 2010).

B. Ground 2 should be denied for failure to establish a reasonable likelihood that the alleged combination of Sugar, Bluetooth, Shin, and Cromer renders Claim 2 unpatentable.

Ground 2 fails because Ground 1 fails as explained above, and Claim 2 depends from Claim 1. *See In re Lemay*, 660 F. App'x 919, 928 (Fed. Cir. 2016).

Moreover, Cromer also does not disclose an overlay protocol, so the alleged combination does not disclose or reasonably suggest “wherein the second wireless network protocol is an overlay protocol with respect to the first wireless network protocol.” *See* Ex. 1022. In fact, the Petition does not even allege that Cromer discloses an overlay protocol. *See* Pet. at 31-34.

Accordingly, Petitioners are not reasonably likely to prevail as to their Ground 2 challenge to Claim 2.

C. Ground 3 should be denied for failure to establish a reasonable likelihood that the alleged combination of Giaimo and Sinivaara renders any of Claims 1, 4, 7, or 8 unpatentable.

- 1. The alleged combination fails to disclose or render obvious the Claim 1 limitation of: “wherein the second wireless network protocol is an overlay protocol with respect to the first wireless network protocol”**

Relying completely on their proposed unreasonably broad construction of “overlay protocol,” Petitioners aver that the alleged combination of Giaimo and Sinivaara meets the Claim 1 limitation of “wherein the second wireless network protocol is an overlay protocol with respect to the first wireless network protocol” because 802.11 ad hoc mode is an overlay protocol with respect to 802.11

infrastructure mode. *See* Pet. at 47-50. Petitioners' purported evidence for this assertion is provided entirely by their retained expert. *See* Pet. at 47.

The 802.11 protocol in ad hoc mode, and the 802.11 protocol in infrastructure mode are not even two different protocols, which is a requirement of Claim 1 ("first network protocol"; "second network protocol"). The 802.11 protocol in ad hoc mode and the 802.11 protocol in infrastructure mode are merely two modes of the same standard or protocol. The Petition does not cite to a single contemporaneous document that discloses or even suggests that ad hoc mode was created as an overlay protocol of infrastructure mode (or that infrastructure mode is an overlay protocol of ad hoc mode, which is equally plausible under Petitioners' theory). *See* Pet. at 47-50. Furthermore, infrastructure mode and ad hoc mode are part of the same 802.11 standard (*see* Ex. 1017 at pp. 23-24), and nowhere does the 802.11 specification state that ad hoc mode is an overlay protocol with respect to infrastructure mode. *See* Ex. 1017. Patent Owner is also unaware of a single contemporaneous source that even suggested that one is an overlay protocol of the other. In fact, contemporaneous evidence shows that ad hoc networks and infrastructure networks were defined or specified at the same time to serve different purposes. *See* Ex. 1017 at p. 25.

Moreover, the 802.11 specification makes clear that a single 802.11x node, such as Petitioners' dreamt-up combination of Giaimo and Sinivaara, cannot even

implement both the BSS (infrastructure) mode and IBSS mode (ad hoc mode) at the same time, as Petitioners assert—the 802.11x protocol itself forbids this, and nothing in either Giaimo or Sinivaara purports to address this prohibition of the 802.11x protocol. Specifically, in the 802.11x protocol, the Capability Information field of an IBSS has the “IBSS” subfield set to one and the “ESS” subfield set to zero, while the Capability Information field of a BSS has the “ESS” subfield set to one and the “IBSS” subfield set to zero. *See* Ex. 1017 at p. 66 (§ 7.3.1.4). A particular STA, such as Petitioners’ alleged Giaimo and Sinivaara combination, cannot be in both ad hoc mode and infrastructure mode simultaneously—at least not without violating a key rule in the 802.11x protocol—and neither Giaimo nor Sinivaara explains how to build a STA that can function simultaneously in ad hoc mode and infrastructure mode while remaining compliant with the 802.11x protocol.

2. **The alleged combination fails to disclose or render obvious the Claim 1 limitation of: “initiating and maintaining wireless network connections with nodes of a wireless network external to the network-enabled hub, maintaining at least a first wireless network connection using a first wireless network protocol and a second wireless network connection using a second wireless network protocol, that can be maintained, at times, simultaneously with each other”**

802.11 STAs cannot be in both 802.11 ad hoc mode and 802.11 infrastructure mode “at times, simultaneously,” as required by Claim 1.³ *See* Ex. 1017 at pp. 23-24; Ex. 1001 at 14:62. Giaimo itself admits that its disclosed system cannot operate in both ad hoc mode and infrastructure mode simultaneously. *See* Ex. 1008 at ¶ [0015] (“enabled in an ad hoc *or* infrastructure mode”); ¶ [0050] (“a client can be switched between infrastructure [mode] ... to ad hoc mode client has switched back to the infrastructure mode”); ¶ [0057] (“should either client need to communicate with the AP ... a step 90 terminates the ad hoc mode and changes the two devices to operate in infrastructure mode.”). In this regard, Giaimo is fully consistent with the 802.11 specification. *See* Ex. 1017 at pp. 23-24. But non-simultaneity falls outside of the scope of Claim 1 of the ’814 Patent. *See* Ex. 1001 at Claim 1 (“maintaining at least a first wireless network connection using a first wireless network protocol and a second wireless network

³ 802.11 infrastructure and ad hoc modes are mutually exclusive. *See supra*. A STA can support one of the two modes at a time. *See supra*.

connection using a second wireless network protocol, that can be maintained, at times, simultaneously with each other in a common wireless space”).

In addition, despite Giaimo’s assertion that a media client may “remain associated with the [AP] ... while *creating* [] a new independent ad-hoc connection ...” (see Pet. at 46-47 (quoting Ex. 1008 at ¶ [0016]) (emphasis added)), that does not mean the client will be able to simultaneously *maintain* both connections as required by Claim 1 (see previous paragraph). In fact, a person of ordinary skill in the art would be severely disinclined to believe that the sentence in Giaimo means the client will be able to simultaneously *maintain* both connections, because the 802.11x protocol prohibits such behavior. And Giaimo does not even suggest how to navigate around this prohibition of the 802.11x protocol. Rather, STAs in an 802.11x network running in an ad hoc mode, simply cannot *maintain any connection* with other nodes because a STA in ad hoc mode has no association *capability*. See Ex. 1017 at p. 25 (“To become a member of an infrastructure BSS, a station shall become ‘associated.’”). In other words, “association” is a state of a STA that is *predicated* on that STA being a member of an infrastructure mode WLAN—it is therefore impossible for a STA to be “associated” (i.e., for a STA to maintain a connection with another STA, as required by Claim 1) unless it is in infrastructure mode. Thus, Giaimo also does not disclose “maintaining wireless

network *connections*”—plural—with nodes in two distinct networks as required by Claim 1.

Sinivaara does not cure these deficiencies in Giaimo, because Sinivaara also does not disclose “initiating and maintaining wireless network connections with nodes of a wireless network external to the network-enabled hub, maintaining at least a first wireless connection using a first network protocol and a second wireless connection using a second wireless protocol, that can be maintained, at times, simultaneously with each other.” *See* Ex. 1007. And Petitioners do not even allege that it does. *See* Pet. at 45-47.

3. A person of ordinary skill in the art would not have been motivated to combine Giaimo and Sinivaara.

Petitioners argue (in a single terse paragraph) that Sinivaara discloses modifications to an ad hoc network protocol such that the combination of Giaimo and Sinivaara discloses an overlay network. *See* Pet. at 49-50. This is incorrect, because a person of ordinary skill in the art would not have been motivated to combine Sinivaara with Giaimo to implement Sinivaara’s purported ad hoc “overlay protocol” within Giaimo’s network.

A Giaimo STA is directed to making wireless networks more efficient by automatically and selectively toggling between infrastructure and ad hoc modes on different channels, depending on the type of data being transmitted. *See* Ex. 1008

at ¶¶ [0014]-[0027]. In contrast, Sinivaara discloses modifications to transmission power “at the expense of range,” transmission of headers at nonstandard rates, and avoidance of certain standard headers for the *sole purpose* of “decreasing power consumption in a wireless terminal intended for a short-range wireless communication system.” Ex. 1007 at Abstract. A person of ordinary skill in the art at the time would have understood that modifying Giaimo’s ad hoc connections according to Sinivaara’s methods would *decrease performance* of Giaimo’s system. For example, with Sinivaara’s methods, “the [radio] range is thus compromised (the coverage is better at a lower rate) in favor of power consumption.” Ex. 1007 at 7:31-32. Sinivaara would thus have degraded Giaimo’s ad hoc connections, which is at cross-purposes to Giaimo’s intent to increase overall system spectrum efficiency by transmitting high QoS packets at higher rates. *See* Ex. 1008 at ¶¶ [0051]-[0053]. Moreover, Sinivaara discards “link quality analysis” to achieve its goals, which is antithetical to Giaimo’s entire purpose—to “make efficient use of wireless devices.” Ex. 1008 at Abstract, ¶ [0060] (finding “Best Signal”), ¶ [0067] (measuring signal-to-noise ratio). “Link quality analysis” is thus important to Giaimo, but not to Sinivaara. *See id.* Yet Petitioners argue that a person of ordinary skill in the art would have abandoned it to force-fit Sinivaara’s teachings in Giaimo’s system.

In addition, Sinivaara discloses modifying beacon intervals and formats to achieve power savings. *See* Ex. 1007 at 8:32-9:17. Beacons are a central feature of 802.11 networks (both infrastructure and ad hoc), and modifying beacons would greatly—and needlessly—complicate Giaimo’s system by requiring modification of the 802.11 MAC layer on all devices intended to be used in ad hoc mode. *See* Ex. 1008 at [0067]. Moreover, as explained above, the proper construction of “overlay protocol” includes the concepts of reducing wireless interference and promoting coexistence. *See supra*. Sinivaara’s methods simply do not aim for—let alone achieve—these interference and coexistence goals; likewise, Sinivaara’s methods do not constitute an overlay protocol as defined by the Court.

Accordingly, because a person of ordinary skill in the art would not have been motivated to degrade Giaimo’s system with Sinivaara’s power-saving techniques, the alleged combination does not disclose an “overlay protocol” as required by Claim 1. Because the alleged combination of Giaimo and Sinivaara fails to disclose or reasonably suggest simultaneous connection to two separate networks, one of which is an overlay of the other, Claim 1 cannot be rendered obvious by the alleged combination.

4. Dependent Claims 4, 7, and 8: the Petition fails to establish that the alleged combination discloses or renders obvious all recited claim limitations of any dependent claim.

Dependent Claims 4, 7, and 8 depend from and include all elements of independent Claim 1. Petitioners rely entirely on the arguments presented for Claim 1 in substantiating their position as to the alleged unpatentability of dependent Claims 4, 7, and 8. Thus, for at least the reasons described above with respect to Claim 1, Petitioners have failed to meet their burden in demonstrating that any of Claims 4, 7, and 8 are rendered unpatentable based on the alleged combination of Giaimo and Sinivaara. *See Comaper Corp. v. Antec, Inc.*, 596 F.3d 1343 (Fed. Cir. 2010).

D. Ground 4 should be denied for failure to establish a reasonable likelihood that the alleged combination of Gurevich, Hansen, and 802.11b/g render Claim 1 unpatentable.

1. The alleged combination fails to disclose or render obvious the Claim 1 limitation of: “wherein the second wireless network protocol is an overlay protocol with respect to the first wireless network protocol”

Ground 4 expands the scope of Petitioners’ proposed construction of “overlay protocol” to encompass *two amendments of the same standard*. That 802.11g and 802.11b are merely amendments of the same 802.11-1999 standard is readily confirmed by the 802.11g specification itself:

802.11g-2003 - IEEE Standard for Information technology-- Local and metropolitan area networks-- Specific requirements-- Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications: Further Higher Data Rate Extension in the 2.4 GHz Band

Publisher: IEEE

[Cite This](#)

 PDF

An Interpretation is available

Amendment to ANSI/IEEE Std 802.11, 1999 Edition (R2003)

Status: Superseded

► Metadata

Abstract:

Changes and additions to IEEE Std 802.11, 1999 Edition, as amended by IEEE Stds 802.11a-1999, 802.11b-1999, 802.11b-1999/Cor 1-2001, and 802.11d-2001, are provided to support the further higher data rate extension for operation in the 2.4 GHz band

Ex. 1030 at p. 1 (annotations added). Besides being unreasonably broad, Petitioners' proposed construction does great violence to the district court's construction. Not only logic and reason, but also deference should guide this Board to adopt the district court's construction. *See Kiosoft Techs., LLC v. PayRange, Inc.*, IPR2021-00086, Paper 12 at 16 (PTAB Mar. 22, 2021).

As with Petitioners' allegation that 802.11g is an overlay of 802.11b (but not vice versa), the only "evidence" they cite is various portions of the 802.11g amendment to the 802.11-1999 protocol that are allegedly "consistent" or "inconsistent" with the 802.11b amendment to the 802.11-1999 protocol. *See Pet.* at 68-73. The 802.11g amendment does not describe itself as an overlay relative to any other amendment in the same standard, such as 802.11b. *See Ex. 1019.* Rather, it describes itself as a "Further Higher Data Rate Extension in the 2.4 GHz

Band,” i.e., an enhancement to the 802.11 standard—or, put another way, an amendment to the 802.11-1999 protocol. *See* Ex. 1019 at p. 1. And the specification states that “[t]he editing instructions contained in this amendment define how to merge the material contained herein into the existing base standard and its amendments to form the comprehensive standard.” Ex. 1019 at p. 12 (emphasis added). One struggles to understand how an “amendment” to a “comprehensive standard” could be an overlay protocol, especially in the context of the teachings of the ’814 Patent. *See Choon’s Design, LLC v. Idea Vill. Prod. Corp.*, 776 F. App’x 691, 696 (Fed. Cir. 2019)]. For its part, the ’814 Patent does not discuss any of the amendments to the 802.11 specification as an overlay protocol, but rather as a single comprehensive standard. *See* Ex. 1001 at 1:40-45 (“802.11x (x=a, b, g, n, etc.) network.”). And again, Patent Owner is unaware of any contemporaneous source stating or even suggesting that 802.11g is an overlay protocol of 802.11b. Certainly, none are cited in the Petition. *See* Pet. at 69-73.

2. **The alleged combination fails to disclose or render obvious the Claim 1 limitation of: “initiating and maintaining wireless network connections with nodes of a wireless network external to the network-enabled hub, maintaining at least a first wireless network connection using a first wireless network protocol and a second wireless network connection using a second wireless network protocol, that can be maintained, at times, simultaneously with each other”**

Claim 1 requires maintaining two connections—one governed by a first

protocol and another governed by an overlay of that first protocol—
simultaneously, at times. Gurevich’s connections, however, use *one physical interface* with multiple virtual interfaces to connect to a plurality of 802.11x networks. *See* Ex. 1010 at Abstract. Therefore, to meet this claim limitation, Petitioners attempt to modify Gurevich in their Ground 4 combination, to implement an 802.11b modulation for one connection, and an 802.11g modulation for another connection. *See, e.g.,* Pet. at 69. The problem with this purported modification is that it is impossible, let alone within the ability of a person of ordinary skill in the art, to implement. In fact, a person of ordinary skill in the art would know that it is impossible for Gurevich’s single wireless radio circuit to initiate and maintain two connections, at times simultaneously—as required by Claim 1—when those connections use two different modulations such as those defined in 802.11b as compared to those defined in 802.11g.

Therefore, because 802.11g is not an overlay protocol of 802.11b, and because Gurevich’s single wireless transceiver cannot operate according to the modulations defined in both amendments simultaneously (because they use different types of modulations, DSSS/CCK [Direct-sequence spread spectrum/Complementary code keying] for 802.11b and OFDM [orthogonal frequency-division multiplexing] for 802.11g), the alleged combination of Gurevich, Hansen, and 802.11b/g does not disclose or reasonably suggest these

elements of Claim 1. Because the alleged combination fails to do so, it cannot render Claim 1 obvious.

Accordingly, Petitioners are not reasonably likely to prevail as to their Ground 4 challenge to Claim 1.

VI. CONCLUSION

For the foregoing reasons, the Board should not institute *inter partes* review on any of the grounds set forth in the Petition.

Respectfully submitted this 24th day of October, 2023.

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CERTIFICATE OF COMPLIANCE

I hereby certify that this Patent Owner Preliminary Response complies with the type-volume limitations of 37 C.F.R. § 42.24(b)(1), because it contains 8,976 words, as calculated by the Microsoft Word program excluding the parts of the brief exempted by 37 C.F.R. § 42.24.

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), I hereby certify that on October 24, 2023 the foregoing *Patent Owner Preliminary Response* is being served electronically by agreement of the parties at the following email addresses.

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