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Paper 17
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MARVELL SEMICONDUCTOR, INC.,
Petitioner,

v.

INTELLECTUAL VENTURES I LLC,
Patent Owner.

Case IPR2014-00547
Patent 6,977,944 B2

Before THOMAS L. GIANNETTI, JAMES A. TARTAL, and PATRICK M. BOUCHER, *Administrative Patent Judges*.

GIANNETTI, *Administrative Patent Judge.*

DECISION
Denying Institution of *Inter Partes* Review
37 C.F.R. § 42.108

Marvell Semiconductor, Inc. ("Petitioner") filed a Petition pursuant to 35 U.S.C. §§ 311–319 to institute an *inter partes* review of claims 7–12 and 19–24 of U.S. Patent No. 6,977,944 B2 ("the '944 patent"). Paper 13

("Pet.").[1] Intellectual Ventures I LLC ("Patent Owner") filed a Preliminary Response. Paper 15 ("Prelim. Resp."). Applying the standard set forth in 35 U.S.C. § 314(a), which requires demonstration of a reasonable likelihood that Petitioner would prevail with respect to at least one challenged claim, we deny the Petition and decline to institute an *inter partes* review of claims 7–12 and 19–24.

I. BACKGROUND

A. The '944 patent (Ex. 1001)

The '944 patent is directed to systems and methods for reducing the likelihood of collisions between data packets in wireless communications channels. Ex. 1001, col. 1, ll. 17–20.

According to Patent Owner, one problem in the state-of-the-art at the time of the claimed invention was that a wireless device compliant with the IEEE 802.11(b) standard could not determine when a wireless device compliant with the IEEE 802.11(g) standard is transmitting over a wireless communication channel. Prelim. Resp. 9; Ex. 1001, col. 1, ll. 45–53. This problem was caused by the two types of wireless devices operating in the same frequency spread spectrum (e.g., the 2.4 GHz frequency spectrum), but employing incompatible modulation schemes. *Id*. The modulation standard for IEEE 802.11(b) is Complementary Code Keying ("CCK") while IEEE 802.11(g) uses Orthogonal Frequency Division Multiplexing ("OFDM"). Ex. 1001, col. 1, ll. 30–31, 50. The latter scheme provides higher bit rates. *Id*. at col. 1, ll. 43–45. The IEEE 802.11(g) OFDM transmissions, however,

[1] References are to the Corrected Petition (Paper 13) filed on June 2, 2014.

are "hidden" from legacy 802.11(b) nodes, which cannot detect the OFDM carrier. *Id.* at col. 1, ll. 50–53.

The '944 patent overcomes this problem by transmitting a first signal in accordance with a first modulation scheme (e.g., OFDM) and a second signal in accordance with a second modulation scheme (e.g., CCK). The second signal is detected and processed by both types of wireless devices. The second signal indicates clear to send ("CTS") and includes a duration field having a value based upon the expected length of time required to transmit at least one data frame. The first signal is then transmitted using the first modulation scheme. Prelim. Resp. 10.

In one embodiment the first signal is detected and processed by one of the types of wireless devices, but not the other. But because the second signal is detected and processed by both types of wireless devices, the wireless devices refrain from using the communications channel until after the length of time indicated by the second frame. During that time, the first signal is transmitted without colliding with another signal. Prelim. Resp. 10; Ex. 1001, col. 3, ll. 22–37.

The '944 patent also describes a second signal indicating CTS that is self-addressed to the sender of the second signal. Prelim. Resp. 10. In the prior art, a request to send/clear to send ("RTS/CTS") sequence requiring two CCK data frames was employed. Prelim. Resp. 10; Ex. 1001, col. 2, ll. 45–47. The technique of addressing the CTS signal to the sender is said to overcome deficiencies of signaling overhead in the prior art and has other advantages. *Id.*, at col. 6, ll. 49–54.

B. Illustrative Claim

Claim 7 is illustrative of the ’944 patent claims at issue:

> 7. A station comprising:
> (a) a receiver for monitoring a shared-communications medium for an opportunity to transmit a first signal and a second signal; and
> (b) a transmitter for:
> (1) transmitting said second signal in accordance with a second modulation scheme on said shared-communications medium, wherein:
> (i) said second signal conveys a frame indicating clear to send that is addressed to the sender of said frame indicating clear to send; and
> (ii) said frame indicating clear to send comprises a duration field that has a value based on the expected length of time required to transmit at least one data frame; and
> (2) transmitting said first signal in accordance with a first modulation scheme on said shared-communications medium after said second signal, wherein said first signal conveys said at least one data frame;
> wherein said frame indicating clear to send and said at least one data frame are addressed to different stations.

C. Related Proceedings

Petitioner states that the ’944 patent is the subject of the following civil actions: *Intellectual Ventures I LLC v. Canon Inc.*, 1:13-cv-473 (D. Del.); *Intellectual Ventures I LLC v. Ricoh Co. Ltd.*, 1:13-cv-474 (D. Del.); and *Intellectual Ventures I LLC v. AT&T Mobility LLC.*, 1:12-cv-00193 (D. Del.). Pet. 1.

D. Claim Construction

The Board interprets claims of an unexpired patent using the broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see also* Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012).

1. "a receiver for monitoring a shared-communications medium"

Petitioner proposes that this phrase should be construed to include "any device that (1) monitors a shared-communications medium via a physical carrier sense mechanism, or that (2) monitors the shared-communication[s] medium via a virtual carrier sense mechanism." Pet. 4. In support of this construction, Petitioner relies on the Background of the Invention in the '944 patent. *Id*. at 4–5. Patent Owner criticizes Petitioner's construction for importing limitations from the Background into the claims. Prelim. Resp. 20–21. And Patent Owner points to a description of an embodiment in the Specification that is broader that Petitioner's proposed construction. *Id*. at 21. Patent Owner proposes, instead, that the term should be given its plain and ordinary meaning. *Id.* We are persuaded by Patent Owner's argument and, based on Patent Owner's reasoning, conclude that Petitioner's construction is not supported by the Specification. Based on our review of the record and the disputes before us at this stage in the proceeding, we determine that no express construction of this term is necessary.

2. "a frame indicating clear to send that is addressed to the sender of said frame"

Petitioner construes this phrase as "broad enough to include and be met by a CTS frame in which a destination address is the address of the device transmitting the CTS frame." Pet. 6. Patent Owner contends that Petitioner's construction "is merely a proposal of a future construction that would 'be broad enough' to encompass some unarticulated criterion." Prelim. Resp. 22. According to Patent Owner, Petitioner is trying to add additional examples to the one specific example (CTS) recited in the claim. *Id.* We agree with Patent Owner's argument and, therefore, based on Patent Owner's reasoning, we do not adopt Petitioner's proposed construction. Based on our review of the record and the disputes before us at this stage in the proceeding, we determine that no express construction of this term is necessary.

3. "the expected length of time required to transmit at least one data frame"

Petitioner proposes that this phrase be construed as "any length of time that is equal to or greater than the time needed to transmit one data frame." Pet. 7. Patent Owner responds that this construction is not the broadest reasonable construction because it disregards the context of the term ("based on the expected length of time required to transmit at least one data frame"). Prelim. Resp. 24. Patent Owner proposes that this term be given its plain and ordinary meaning. *Id.* We agree with Patent Owner's

contention and reasoning and conclude that no express construction of this term is necessary.

4. "modulation scheme"

Petitioner proposes that we construe this term to mean "a protocol used to communicate data, with different modulation schemes covering different protocols used to communicate data." Pet. 9. Patent Owner responds by proposing as a construction "a scheme by which one or more characteristics of a carrier are varied in accordance with a modulating signal." Prelim. Resp. 25. Patent Owner relies on an IEEE dictionary definition. *Id*. at 25–26; Ex. 2003. Patent Owner asserts that Petitioner's proposed construction is contrary to the plain meaning of the term because it appears to specify that different communication protocols necessarily have different modulation schemes. Prelim. Resp. 26. Patent Owner points out that IEEE 802.11(g) and 802.11(a) are different communication protocols that can use the same modulation scheme (e.g., OFDM). *Id*. We are persuaded by Patent Owner's argument and agree that this term should be given its plain and ordinary meaning. *Id.* We, therefore, determine that no express construction of this term is necessary.

5. "the expected length of time required to transmit the subsequent data frames conveyed by said first signal and said third signal"

This term appears in claims 19–24. Petitioner proposes that we construe it as "interpreted broadly enough to include and be met by a length of time required to transmit two data frames." Pet. 10. Patent Owner asserts

that this is not a construction, but a proposal for a "future unspecified construction." Prelim. Resp. 27. Patent Owner proposes, instead, that this term be given its plain and ordinary meaning. *Id.* We agree with Patent Owner's argument, and therefore, we do not adopt Petitioner's proposed construction. Based on our review of the current record and the disputes before us, we are persuaded that no express construction is required at this time.

E. References

Petitioner relies on the following references:

Sherman	US 7,046,690 B2	Jan. 15, 2002	Ex. 1004
Chen	US 7,177,294 B2	Oct. 25, 2001	Ex. 1005
Sugar	US 7,050,452 B2	Oct. 5, 2001	Ex. 1006
Choi	US 7,206,840 B2	Oct. 12, 2001	Ex. 1007

Petitioner also relies on Admitted Prior Art ("APA") as discussed below. Petitioner also relies on a Declaration from Professor Zhi Ding ("Ding Decl."). Ex. 1003.

F. Grounds Asserted

Petitioner challenges claims 7–12 and 19–24 of the '944 patent on the following grounds.

References	Basis	Claims Challenged
Sherman	§ 102(e)	7, 8, 10, 19, 22, and 23
Sherman and APA	§ 103(a)	9, 11, 12, 20, 21, and 24
Chen and Choi	§ 103(a)	7, 8, 10–12, 19, 20, and 22–24
Chen, Choi, and APA	§ 103(a)	9 and 21

Sugar and Choi	§ 103(a)	7, 8, 10–12, 19, 20, and 22–24
Sugar, Choi, and APA	§ 103(a)	9 and 21

II. ANALYSIS

1. Asserted Grounds Based on Sherman

Sherman is relied upon alone and in combination with APA as prior art against all challenged claims. Pet. 3. Sherman's filing date of January 15, 2002, is earlier than the November 15, 2002, filing date of the '944 patent. Petitioner contends that Sherman qualifies as prior art to the '944 patent under 35 U.S.C. § 102(e). *Id.*

However, as Petitioner recognizes, the '944 patent issued from a provisional application dating back to January 12, 2002, and claims the benefit of that earlier filing date. Pet. 3, 14; Ex. 1001, col. 1, ll. 9–13. As Petitioner acknowledges, "[a]s a consequence, the effective filing date for claims 7–12 and 19–24 of the '944 patent is no earlier than January 12, 2002." Pet. 3.

In support of that earlier effective filing date, Patent Owner provides an analysis of the '944 patent in relation to the provisional application. Prelim. Resp. 14–19. We have reviewed that analysis and determined that Patent Owner has demonstrated adequately the entitlement of the '944 patent to the benefit of the January 12, 2002, filing date of the provisional application.

Patent Owner further contends that Sherman does not qualify as prior art to the ’944 patent because Sherman was filed after the ’944 patent’s effective filing date of January 12, 2002. Prelim. Resp. 4, 28–29. Patent Owner contends that Petitioner has not shown that Sherman is entitled to an effective date as prior art that is earlier than the effective filing date of the ’944 patent. *Id*. In that regard, Sherman claims the benefit of the filing date of several provisional applications, the earliest of which was filed on January 16, 2001. Ex. 1004, col. 1, ll. 4–12. However, Petitioner has not provided the necessary proof that Sherman is entitled to that earlier filing date. *In re Giacomini*, 612 F.3d 1380, 1383 (Fed. Cir. 2010); *Ex parte Yamaguchi*, 88 USPQ2d 1606 (BPAI 2008)(precedential). In fact, Petitioner has not even provided copies of the provisional applications for the record. Prelim. Resp. 28–29.

We agree with Patent Owner that Petitioner has failed to demonstrate adequately that Sherman qualifies as prior art. Petitioner was aware that the ’944 patent claimed the benefit of the January 12, 2002 provisional filing date, but did not provide the Board with any evidence that Sherman’s effective filing date was earlier.

Patent Owner asserts that even if Sherman were prior art to the ’944 patent, Sherman does not disclose certain elements of the challenged claims. Prelim. Resp. 5, 29–31. Patent Owner also asserts that the combination of Sherman and APA does not render obvious any of the challenged claims. *Id.* at 31–32. Because we have determined that Petitioner has not established that Sherman qualifies as prior art, we do not reach those contentions.

2. Asserted Grounds Based on Chen

As described by Petitioner, Chen describes a control point that reduces collisions in a shared wireless network in which signals are exchanged in the wireless local area network ("WLAN") and Bluetooth ("BT") protocols. *See* Ex. 1005, Fig. 1B. To avoid collisions, the control point in Chen monitors the shared wireless network for potential collisions between WLAN traffic and BT traffic. When a potential collision is detected, the control transmits a WLAN jamming signal that temporarily stops transmission of a WLAN data signal, transmits a BT signal without interference, and then transmits the WLAN data signal after the BT signal has had sufficient time to transmit without interference. *See* Pet. 28.

As described by Petitioner, Choi describes a device that temporarily stops WLAN traffic for a specified time by sending a CTS frame addressed to itself. Pet. 29. Petitioner recognizes that the purpose of pausing WLAN traffic in Choi (to assess signal strength) is different than the purpose of pausing WLAN traffic in Chen (reducing collisions). *Id.* Nevertheless, Petitioner contends that a person of ordinary skill would have recognized that using the address of the sender in Chen's CTS frame "is a suitable option for the needed address and involved a simple application of a known technique that would yield a predictable result." *Id.*

Patent Owner contends that it would not have been obvious to combine Chen and Choi in the manner proposed by Petitioner. Prelim. Resp. 32. Patent Owner contends that those references teach away from one another. *Id.* Patent Owner recognizes that Petitioner relies on Choi only for its teaching of a CTS frame addressed to its sender. *Id.* at 33. However,

Patent Owner contends that Choi teaches sending a CTS frame from a control point to keep *all* of the Bluetooth and WLAN devices silent for a period of time so that channel can be measured when the network is silent. *Id*. This, according to Patent Owner, is contrary to the purpose of Chen, which is to defer transmission of WLAN devices so that the BT service can transmit higher priority data packets. *Id*.

We are persuaded by Patent Owner's argument that Petitioner has not provided a sufficient rationale for combining Chen and Choi. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007)("'[T]here must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.'") (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). In that regard, we find instructive the testimony provided by Petitioner's declarant Professor Ding, on which Petitioner relies in support of its obviousness argument. Professor Ding testifies as follows:

> I find Choi's technique for temporarily pausing WLAN traffic perfectly applicable and relevant to Chen's need to temporarily pause WLAN traffic. Upon reading Choi's disclosure of a self-addressed CTS frame to pause WLAN traffic . . . , it is clear *to me* that the technique can be readily extended to Chen's system to use the address of the sender in Chen's CTS frame.

Ex. 1003 ¶ 41 (emphasis added.) Professor Ding does not explain adequately why a person of ordinary skill would have applied Choi's self-addressed CTS frame in Chen's system when the purpose of the systems is so different. Instead he provides conclusory testimony that "I find Choi's technique for temporarily pausing WLAN traffic perfectly applicable and relevant to Chen's need to temporarily pause WLAN traffic." *Id*.

We are persuaded after reviewing Professor Ding's testimony that he has not sufficiently taken into account what would have been obvious to a person of ordinary skill in the time the invention of the '944 patent was made and instead, has used his own present skill and knowledge as a reference point. This is not the proper test for obviousness. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966); *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 666–67 (Fed. Cir. 2000). Accordingly, we give Professor Ding's testimony little weight.

Nor are we persuaded by Petitioner's argument that a person of ordinary skill would have recognized, from reviewing Choi that self-addressing the CTS frame "is a suitable option for the needed address and involved a simple application of a known technique that would yield a predictable result." Pet. 29. In support of this assertion, Petitioner cites the testimony of Professor Ding discussed above, to which we give minimal weight. We are, instead, persuaded by Patent Owner's argument that because Choi is directed to a solving a different problem (channel measurement), combining its teachings with Chen would not have been obvious. Prelim. Resp. 32–34.

We are not persuaded that Petitioner has demonstrated a reasonable likelihood that it would prevail on its argument that person of ordinary skill would have modified Chen in accordance with Choi's disclosure of self-addressing a CTS frame. We agree with Patent Owner that this would be contrary to the teachings of Chen, and we, therefore, are not persuaded that Petitioner has provided sufficient record support for why person of ordinary skill would have made such a combination.

Patent Owner also asserts that even if combined, the combination of Chen and Choi does not render obvious any of the challenged claims. Prelim. Resp. 34–38. Because we have determined that Petitioner has not provided an adequate record for making that combination, we do not reach those contentions.

3. Asserted Grounds Based on Sugar

As described by Petitioner, Sugar describes interference mitigation for a multiprotocol device ("MPD"). The MPD acts as both an access point for an 802.11 network, as well as a node for a BT network. "To guarantee reliable delivery of a BT packet, the MPD transmits a guard packet using an 802.11 protocol to alert other 802.11 stations to refrain from transmitting for a duration long enough to transmit the BT packet." Pet. 41. Information concerning the duration can be included in a CTS packet within the header of the guard packet. *Id.*

In Sugar, any given 802.11 station in the network can transmit continuously for a maximum time duration denoted as F. Therefore, to ensure each 802.11 station in the network receives at least one CTS packet, "Sugar describes transmitting N consecutive CTS packets such that they outlast the duration F." Pet. 41.

Petitioner again relies on Choi for its teaching of stopping WLAN traffic for a specified period of time by sending a CTS frame addressed to itself. Pet. 42. And Petitioner again recognizes that the purpose of stopping WLAN traffic in Choi (i.e., to assess the signal strength) is different than the purpose of stopping 802.11 traffic in Sugar (i.e., to mitigate interference with the BT packets). However, Petitioner describes that Choi has "an

efficient way of addressing multiple stations to ask them to refrain from transmitting for a predetermined time period." Pet. 42. Thus, according to Petitioner, a person of ordinary skill would have found Choi's technique for temporarily stopping WLAN traffic "perfectly applicable and relevant to Sugar's need to temporarily stop 802.11 traffic." Pet. 42. According to Petitioner, a person of ordinary skill would have recognized that using the address of the sender and Sugar's CTS frame is "a suitable option for the needed address and involved a simple application of a known technique that would yield a predictable results." *Id.*

In support of this assertion, Petitioner again relies on Professor Ding's testimony, particularly where he testifies as follows:

> Upon reading Choi's disclosure of a self-addressed CTS frame to pause WLAN traffic . . . it is clear *to me* that the technique can be readily extended to Sugar's system to use the address of the sender in the CTS frames described by Sugar. I find that to be a suitable option for the needed address, which involves a simple application of a known technique and would yield a predictable result. It is also clear *to me* that using Choi's address of the sender in Sugar's CTS frames would offer the same advantages noted above with respect to the combination of Chen and Choi.

Ex. 1003 ¶47 (emphases added.)

Patent Owner responds that there is no factual basis for the asserted combination of Sugar and Choi. Prelim. Resp. 38. Patent Owner further contends that Choi and Sugar teach away from making this combination. *Id.* Recognizing that Choi discloses sending a CTS frame self-addressed to the receiver, Patent Owner contends that this teaches away from Sugar, which discloses inserting a sequence of N CTS packets not addressed to the sender

in the header portion of the guard packet. *Id*. Patent Owner asserts Sugar's teachings would have led one of ordinary skill in the art in a different technical direction than Choi's teachings. *Id*. at 39. Patent Owner asserts there is no motivation to replace the N consecutive CTS packets in Sugar with a single self-addressed CTS frame as described in Choi. *Id*. at 39–40. Patent Owner points out that Sugar's arrangement guarantees that at least one CTS packet is received by all of the 802.11 stations. *Id*. at 40. This would "thwart[]" the purpose of Choi, which is to silent all stations in the network. *Id.*

For the same reasons expressed above with respect to the combination of Chen and Choi, we agree with Patent Owner's argument that Petitioner has not established a sufficient rationale for combining Sugar and Choi. We find Professor's Ding's testimony on this point unhelpful and give it minimal weight. In that regard, we note once again that Professor Ding's frame of reference for obviousness is himself and not a person of ordinary skill in the art at the time the invention was made. We also are persuaded by Patent Owner's argument that Choi and Sugar address different problems in different ways. We, therefore, are not persuaded that Petitioner has provided sufficient record support for why person of ordinary skill would have made such a combination.

In view of this determination, we do not reach Patent Owner's contentions regarding the inadequacy of Sugar-Choi combination to meet the elements of the claims.

III. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is denied and no *inter partes* review is instituted.

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