

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SPRINT SPECTRUM, L.P.,
Petitioner,

v.

TC TECHNOLOGY LLC
Patent Owner.

Case IPR2017-00771
Patent 5,815,488

Before JEFFREY S. SMITH, THOMAS L. GIANNETTI, and
CHARLES J. BOUDREAU, *Administrative Patent Judges*.

SMITH, *Administrative Patent Judge*.

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

I. INTRODUCTION

Petitioner, Sprint Spectrum, L.P., filed a Petition for *inter partes* review of claims 1 and 2 of U.S. Patent No. 5,815,488 (Ex. 1001, “the ’488 patent”). Paper 1 (“Pet.”). Patent Owner, TC Technology LLC, filed a Preliminary Response. Paper 9 (“Prelim. Resp.”). Institution of an *inter partes* review is authorized by statute when “the information presented in the petition . . . and any response . . . shows that there is 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); *see* 37 C.F.R. § 42.108.

Upon consideration of the Petition and the Preliminary Response, we are not persuaded Petitioner has demonstrated a reasonable likelihood that it would prevail in establishing the unpatentability of claims 1 and 2 of the ’488 patent. Accordingly, we do not institute an *inter partes* review.

A. Related Matters

Both parties identify that the ’488 patent was asserted against Sprint Spectrum, L.P., in *TC Technology LLC v. Sprint Corp. & Sprint Spectrum, L.P.*, Case No. 1:16-cv-153 (D. Del.), filed March 10, 2016. Pet. 2; Paper 6.

B. The ’488 Patent

The ’488 patent is titled “Multiple User Access Method Using OFDM” (Orthogonal Frequency Division Multiplexing), and relates generally to a communications method permitting multiple users to simultaneously access an RF channel with a high degree of immunity to channel impairments. Ex. 1001, 1:6–9. At each remote location, data to be transmitted is coded by translating each group of one or more bits of data into a transform coefficient associated with a frequency in a particular subset of orthonormal

baseband frequencies allocated to each remote location. *Id.* at Abstract. The particular subset of orthonormal baseband frequencies allocated to each location is chosen from a set of orthonormal baseband frequencies. *Id.* At each remote location, an electronic processor performs an inverse orthogonal transform on the transform coefficients to obtain a block of time domain data. *Id.* The time domain data is then modulated on a carrier for transmission to the central location. *Id.* The data is received from the plurality of remote locations, and demodulated to obtain time domain data. *Id.* The central location keeps track of which baseband frequencies are allocated to which remote location. *Id.*

C. Illustrative Claim

Claim 1 is illustrative of the claimed subject matter:

1. A method for enabling a plurality of remote locations to transmit data to a central location comprising the steps of:

at each remote location, coding data to be transmitted by translating each group of one or more bits of said data into a transform coefficient associated with a particular baseband frequency in a particular subset of orthogonal baseband frequencies allocated to the remote location, the particular subset of orthogonal baseband frequencies allocated to each remote location being chosen from a set of orthogonal baseband frequencies, the subsets of baseband frequencies allocated to each remote location being mutually exclusive;

at each remote location, using an electronic processor, performing an inverse orthogonal transformation on said transform coefficients to obtain a block of time domain data;

at each remote location, utilizing a modulator to modulate said block of time domain data onto a carrier signal for transmission to said central location, said carrier signal having the same carrier frequency for each remote location;

receiving at said central location from one or more of said remote locations, one or more blocks of time domain data modulated on one or more of said carrier signals;

using a demodulator, demodulating said one or more blocks of time domain data from the carrier frequency signal.

performing said orthogonal transformation on said demodulated time domain data to reconstruct said transform coefficients, and

translating said transform coefficients into said data to be translated from each remote location.

Ex. 1001, 10:47–11:10.

D. Asserted Grounds of Unpatentability

Petitioner contends that claims 1 and 2 of the '488 patent are unpatentable based on the following specific grounds:

Reference(s)	Basis
Fattouche ¹	§ 103
Reiners ² and Cost ³	§ 103
Cioffi ⁴ and Pommier ⁵	§ 103

Pet. 16.

¹ European Patent Application 0562868 A2, filed March 25, 1993, published September 29, 1993 (Ex. 1004).

² C. Reiners et al., “Multicarrier Transmission Technique in Cellular Mobile Communications Systems,” IEEE 1994 (Ex. 1005).

³ COST 207: *Digital Land Mobile Radio Communications*, Final Report, Commission of the European Communities, 1989 (Ex. 1006).

⁴ US Patent No. 5,625,651 filed June 2, 1994, issued April 29, 1997 (Ex. 1007).

⁵ European Patent Application 0616445 B1 filed March 17, 1994, published September 21, 1994 (Ex. 1008).

II. DISCUSSION

A. *Claim Construction*

The Board interprets claims of an expired patent using the principles set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). See 37 C.F.R. § 42.5(b); see also *In re Rambus Inc.*, 694 F.3d 42, 46 (Fed. Cir. 2012) (“While claims are generally given their broadest possible scope during prosecution, the Board’s review of the claims of an expired patent is similar to that of a district court’s review.”) (internal citation omitted) (“*Phillips*” standard). Under this approach, claim terms are given their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art, at the time of the invention, in light of the language of the claims, the specification, and the prosecution history of record. *Phillips*, 415 F.3d at 1313.

Petitioner and Patent Owner do not dispute any claim constructions. Prelim. Resp. 14. For purposes of this decision, we determine no terms need an explicit construction to resolve a controversy at this preliminary stage. See *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (only those terms which are in controversy need to be construed and only to the extent necessary to resolve the controversy).

B. *Asserted Obviousness over Fattouche*

Petitioner contends that claims 1 and 2 are unpatentable under 35 U.S.C. § 103 over Fattouche. Pet. 16–31.

1. *Fattouche (Ex. 1004)*

Fattouche provides for multiple access between transceivers in wireless communication using OFDM spread spectrum. Ex. 1004, Title. A first frame of information is multiplexed over a number of wideband

frequency bands at a first transceiver, and the information is transmitted to a second transceiver. *Id.* at Abstract. Figure 2 of Fattouche is reproduced below.

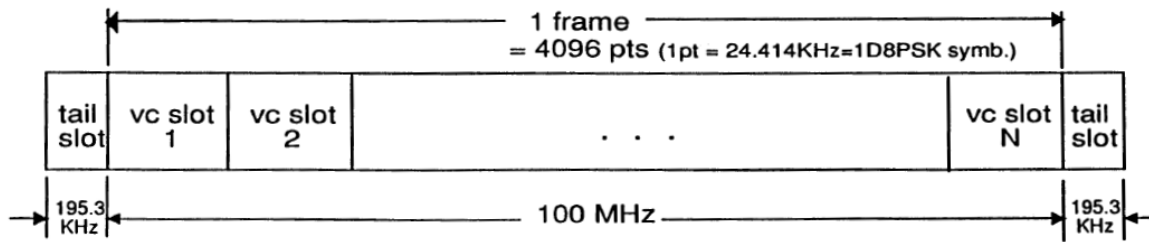


Fig. 2

Figure 2 of Fattouche above shows the use of available frequencies for use with cellular applications. *Id.* at 3:40–41. A 100 MHz band is divided into 4096 points, plus two tail slots, to implement wideband modulation in a cellular system with a plurality of portables and one or more base stations. *Id.* at 6:5–7. The 4096 points represent N voice channels (vc). *Id.* at 6:7. Each point represents a Differential eight Phase Shift Keying Symbol. *Id.* at 6:7–8. Figure 4 of Fattouche is reproduced below.

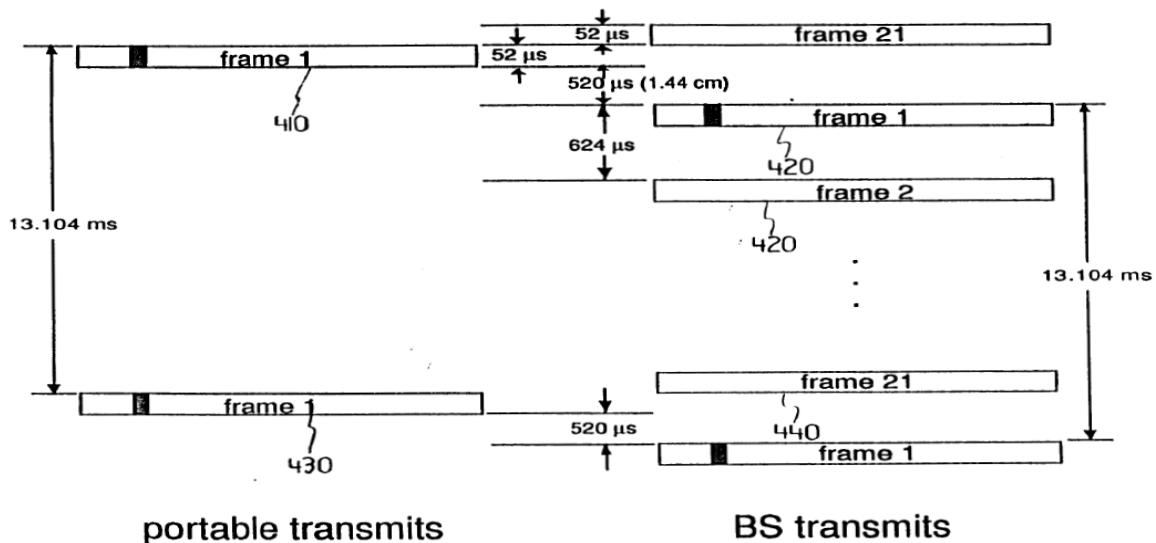


Fig. 4

Figure 4 above shows a Time Division Duplex protocol used for exchange of information between the portable and the base station. *Id.* at 6:36–37. A portable transmits frame 410 over one vc slot. *Id.* at 6:38. The frames 440 labeled “frame 2 . . . frame 21” are frames that may be transmitted to other portables. *Id.* at 6:53–54. For example, while one base station is processing its data, six other base stations can communicate to their corresponding portables in a Time Division Multiple Access (TDMA) fashion using the same frequency bands. *Id.* at 6:54–56.

2. Analysis

Claim 1 recites the following “translating” step:

at each remote location, coding data to be transmitted by translating each group of one or more bits of said data into a transform coefficient associated with a particular baseband frequency *in a particular subset of orthogonal baseband frequencies allocated to the remote location . . . the subsets of baseband frequencies allocated to each remote location being mutually exclusive.*

Ex. 1001, 10:49–53 (emphasis added). Claim 2 recites a similar limitation. *Id.* at 11:13–17. Petitioner contends that Fattouche teaches this limitation in disclosing that each portable transmits information over one vc slot. Pet. 18 (citing Ex. 1004, 6:38). Petitioner also asserts that Fattouche “teaches the portables use the set of N vc slots depicted in Figure 2, each vc representing a particular subset of the baseband frequencies, in accordance with frequency division multiple access (“FDMA”). *Id.* Petitioner relies on testimony of Dr. Singer to support its argument that FDMA denotes assigning multiple users exclusive frequencies within a frequency band. *Id.* (citing Ex. 1002 ¶ 86).

Patent Owner responds that Petitioner has failed to demonstrate that Fattouche meets this limitation. Patent Owner argues “Petitioner . . . did not demonstrate that Fattouche expressly or inherently discloses its portable units transmitting data at the same time to the central location on the same carrier frequency.” Pet. 16 (footnote omitted). Patent Owner contends further that Petitioner has “mixed and matched incompatible embodiments from Fattouche” without proper explanation. *Id.*

Thus, Patent Owner argues that one of Fattouche’s embodiments “defines a frame as encompassing all of the baseband frequencies and encodes and transmits the whole frame (all of the baseband frequencies, rather than a subset) at one time.” *Id.* at 17. According to Patent Owner, Petitioner relies on this “first, full-frame embodiment” when addressing the translating step. *Id.* However, Patent Owner contends, the claims require “allocating mutually exclusive subsets of baseband frequencies to the remotes.” *Id.* at 19. When addressing this limitation, “Petitioner abandoned the above-discussed full-sized frame embodiment, relying instead on a different and incompatible embodiment” in which the portable transmits frame 410 over one slot. *Id.* at 20 (citing Ex. 1004, 6:37–38).

Patent Owner relies on testimony of Dr. Haas to support its argument that Fattouche’s teaching of transmitting a frame 410 over one vc slot is not compatible with Fattouche’s teaching of transmitting a frame that encompasses all of the vc slots shown in Figure 2. Prelim. Resp. 20 (citing Ex. 1004, 6:37–38, Fig. 2; Ex. 2001 ¶¶ 36–47, 53–57). Dr. Haas testifies that:

Fattouche states, “the portable transmits a frame 410 over one vc slot. See the discussion in relation to Figure 5a below.” Fattouche 6:38. This is either a different embodiment than

Figure 2 above or a mistake because in Figure 2 a “frame” equals all the N vc slots, so transmitting a “frame 410 over one vc slot” does not make sense. Further, certain portions of Fattouche, which I explain further below, describe Figure 2’s frame in more detail and disclose that a frame is all 4096 points (i.e., all N vc slots) and that the full frame is transmitted by a single transmitter. In fact, Fattouche’s detailed description (including its explanation of Figure 5) also describes transmitting a frame over one time slot, and *not* one vc slot

Ex. 2001 ¶ 37. Dr. Haas further testifies that Fattouche teaches each portable transmitting one frame at a time using the Time Division Duplex operation illustrated in Figure 4. Ex. 2001 ¶¶ 44–45.

We are persuaded by the testimony of Dr. Haas that, taken literally, the meaning of Fattouche’s description of transmitting a frame 410 having multiple vc slots over one vc slot “does not make sense.” We are also persuaded by the testimony of Dr. Haas that the description of transmitting a frame 410 over one vc slot in Fattouche likely means transmitting one frame over one time slot, using a Time Division operation, as shown in Figure 4 of Fattouche. In light of this expert testimony, we are not persuaded by Petitioner’s explanation of how Fattouche teaches that a person of ordinary skill in the art would transmit a frame of N voice channel slots as shown in Figure 2 of Fattouche over one voice channel slot as discussed on Page 6, line 38 of Fattouche. Petitioner, therefore, does not sufficiently show that Fattouche teaches “the subsets of baseband frequencies allocated to each remote location being mutually exclusive” as claimed in the “translating” step.

On the record before us, we determine the Petition and supporting evidence do not adequately establish a reasonable likelihood that Petitioner would prevail on its assertion that Fattouche renders claims 1 and 2 obvious.

C. Asserted Obviousness over Reiners and Cost

Petitioner contends that claims 1 and 2 are obvious over Reiners and Cost. Petitioner contends that Reiners (Ex. 1005), an article, was published at a vehicular technology conference in Stockholm on June 8, 1994. Pet. iii, 6. This is more than a year before the September 28, 1995, filing date of the '488 patent, and would, therefore, qualify Reiners as a prior art reference under 35 U.S.C. § 102(b). Patent Owner contends that Petitioner's assertion that Reiners was published on June 8, 1994, lacks any supporting evidence or reasoning, and Petitioner therefore has not established that Reiners is a printed publication under 35 U.S.C. § 102(b). Prelim. Resp. 35.

To qualify as a printed publication within the meaning of § 102, a reference "must have been sufficiently accessible to the public interested in the art." *In re Cronyn*, 890 F.2d 1158, 1160 (Fed. Cir. 1989) (quoting *Constant v. Adv. Micro-Devices, Inc.*, 848 F.2d 1560, 1568 (Fed. Cir. 1988)). "Because there are many ways in which a reference may be disseminated to the interested public, 'public accessibility' has been called the touchstone in determining whether a reference constitutes a 'printed publication' bar under 35 U.S.C. § 102(b)." *In re Hall*, 781 F.2d 897, 898–99 (Fed. Cir. 1986). "The determination of whether a reference is a 'printed publication' under 35 U.S.C. § 102 involves a case-by-case inquiry into the facts and circumstances surrounding the reference's disclosure to members of the public." *In re Klopfenstein*, 380 F.3d 1345, 1350 (Fed. Cir. 2004).

We are persuaded that Petitioner has failed to meet its burden of establishing Reiners as prior art. We observe that the footer on the first page of Reiners contains the following copyright notice: 0-7803-1927-3/94/\$4.00 © 1994 IEEE. Ex. 1004, 1645. However, the copyright notice, by itself,

does not indicate that Reiners was publicly accessible more than one year prior to September 28, 1995. *See In re Lister*, 583 F.3d 1307, 1316 (Fed. Cir. 2009) (vacating and remanding the Board of Patent Appeals and Interferences' decision that a prior art reference registered with the U.S. Copyright Office and included in the Westlaw and Dialog databases was publicly accessible for the purposes of 35 U.S.C. § 102(b)). We conclude that Petitioner has provided no persuasive evidence showing that Reiners was publicly accessible at the vehicular technology conference held in Stockholm on June 8, 1994,

Because Petitioner has not sufficiently demonstrated that Reiners is prior art to the '488 patent, on the record before us, we determine the Petition and supporting evidence do not adequately establish a reasonable likelihood that the combination of Reiners and Cost renders claims 1 and 2 obvious.

D. Asserted Obviousness over Cioffi and Pommier

Petitioner contends that claims 1 and 2 are obvious over the combination of Cioffi and Pommier (Ex. 1008). Pommier is a European patent based on European Patent Application No. 0616445 A1. According to Petitioner, Pommier was published on September 21, 1994 (the publication date of the application), and therefore qualifies as prior art under 35 U.S.C. § 102(b). Pet. 6. Patent Owner asserts that the issued Pommier patent, which is Exhibit 1008, was published on May 31, 2000, and therefore does not qualify as prior art. Prelim. Resp. 55.

We agree with Patent Owner that Petitioner has failed to establish the Pommier patent as prior art. Although Petitioner cites the publication date of the Pommier *application* (EP 0616445 A1) to establish that Pommier is

prior art, Petitioner does not provide a copy of this application. Petitioner relies, instead, on the issued Pommier *patent* in its analysis and has submitted the patent (EP 0616445 B1) as Exhibit 1008. The record before us, therefore, does not contain the published application EP 0616445 A1, nor does the record contain an English language translation of EP 0616445 A1. The only Pommier reference on the record before us is EP 0616445 B1, published May 31, 2000, which is not prior art.⁶

Because Petitioner has not sufficiently demonstrated that Pommier is prior art to the '488 patent, on the record before us, we determine the Petition and supporting evidence do not adequately establish a reasonable likelihood that the combination of Cioffi and Pommier renders claims 1 and 2 obvious.

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has failed to demonstrate a reasonable likelihood of prevailing on its challenge to the patentability of claims 1 and 2 of the '488 patent.

IV. ORDER

Accordingly, it is

ORDERED that the Petition is denied as to all challenged claims of the '488 patent.

⁶ Our rules require all evidence to be provided in the form of an exhibit. 37 C.F.R. § 42.63(a). Further, a translation is required for foreign language documents. 37 C.F.R § 42.63(b).

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PETITIONER:

James Murphy
Margaux Savee
POLSINELLI PC
jpmurphy@polsinelli.com
msavee@polsinelli.com

Robert H. Reckers
Christine Guastello
Elena McFarland
SHOOK, HARDY & BACON L.L.P.
rreckers@shb.com
cguastello@shb.com
emcfarland@shb.com

PATENT OWNER:

Lawrence Gotts
Jon Strang
Saswat Misra
LATHAM & WATKINS LLP
lawrence.gotts@lw.com
jonathan.strang@lw.com
saswat.misra@lw.com