Paper 8

Filed: January 5, 2017

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.

Petitioner

v.

CHANBOND LLC

Patent Owner

Case IPR2016-01898

Patent 8,341,679

PATENT OWNER'S PRELIMINARY RESPONSE TO PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 8,341,679

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EXHIBIT LIST

Exhibit No.	Description
2001	U.S. Patent No. 8,984,565 to Hennenhoefer et al.
2002	U.S. Patent No. 6,005,855 to Zehavi et al.
2003	U.S. Patent No. 8,341,679 File History, Final Rejection (March 29, 2012)

I. INTRODUCTION

Pursuant to 37 C.F.R. § 42.107(a), Patent Owner, ChanBond LLC, submits the following preliminary response to the Petition, setting forth reasons why no *inter partes* review should be instituted under 35 U.S.C. § 314.

Petitioner has set forth allegations of obviousness under 35 U.S.C. § 103 with respect to the challenged claims based on various combinations of references. None of those references, however, discloses the limitation of modulating digital information into *at least two* separate RF channels, which appears in each of the challenged claims.

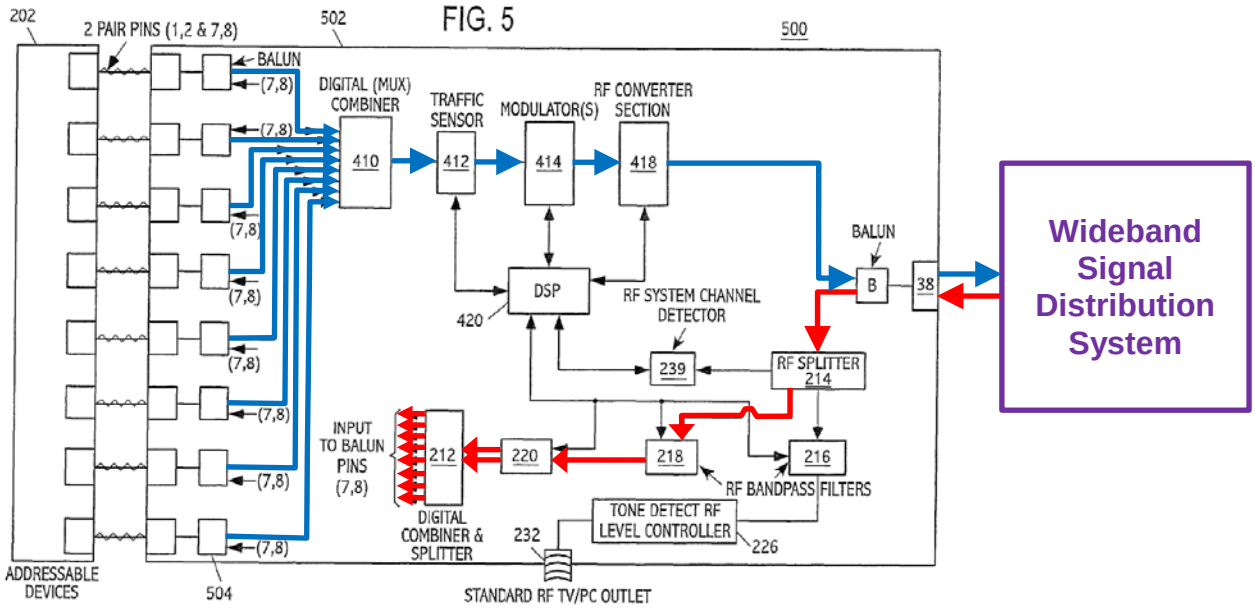
As a result, Petitioner has not demonstrated a reasonable likelihood that at least one of the challenged claims is unpatentable, and the Board should not institute *inter partes* review. 37 C.F.R. § 42.108(c).

II. OVERVIEW OF U.S. PATENT NO. 8,341,679[1]

U.S. Patent No. 8,341,679 ("the '679 Patent," EX1001) is "directed … to an intelligent device system and method for distribution of digital signals onto, and off of, a wideband signal distribution system." EX1001, '679 Patent at 1:25–29. One of the problems the '679 Patent inventors intended to solve was the inability to "download to individual users large quantities of digitized images (video, film, … etc.), and to … allow those digital images to be displayed with the enhanced quality such digital images can offer." *Id*. at 1:59–63. The transfer of such information typically "clog[ged] data networks" or "severely degraded" the network's performance. *Id*. at 1:36–37, 1:67–2:1. The inventors recognized that it was "desirable to transport the digitized data on an analog carrier … in a format that would allow for greater amounts of data to be carried at one time, such as by modulated RF." *Id*. at 2:13–16. The '679 invention "offers the advantage that a high amount of throughput can be achieved in the transmission of digital and/or analog information on an RF … carrier." *Id*. at 6:45–49.

[1] Patent Owner provides an identical overview of the '679 Patent in its preliminary responses to IPR2016-01898, IPR2016-01899, and IPR2016-01900. The same overview was previously provided in the preliminary responses to IPR2016-01889, IPR2016-01890, and IPR2016-01891 for related U.S. Patent No. 8,984,565.

The inventors recognized that digital transmission systems "often employ[ed] analog waveforms, such as RF carrier waveforms, as a physical-layer transport mechanism …." *Id.* at 5:8–10. Fig. 5 of the '679 Patent (reproduced below with annotations in color) depicts "an intelligent device system for use in local sending of digital information and receiving of digital … information using RF modulation[.]" *Id.* at 4:48–51.[2]



The exemplary system of Fig. 5 is capable of both sending RF signals to, and receiving RF signals from, a wideband signal distribution system via

[2] Some of the passages quoted below relate to corresponding features of the embodiments of Figs. 2 and 4. "The local send and receive intelligent device system [of Fig. 5] includes certain of the devices of FIGS. 2 and 4." EX1001, '679 Patent at 10:26–27.

broadband uniform distribution (BUD) unit 38. *Id.* at 7:10–11, 10:23–27, 10:52–60. The transmission and reception paths are annotated in blue and red, respectively, and are discussed separately below.

A. Transmitting Information

When sending data to the wideband signal distribution system (blue path in the annotated Fig. 5), the exemplary system of Fig. 5 receives digital information from a number of addressable devices 202 and modulates it onto an RF signal. "The system of FIG. 5 preferably includes a plurality of addressable devices 202, such as Ethernet or NIC cards, or digital display devices …." *Id.* at 10:28–30. "The signals incoming from each of the addressable devices 202 are combined by a digital combiner 410, and passed through a traffic sensor 412, at least one modulator 414, and an RF converter section 418." *Id.* at 10:42–45. "The output of the RF converter section 418 is preferably impedance matched to a BUD [broadband uniform distribution unit] 38, and feeds the signal exiting the RF converter section 418 to the BUD input port or ports." *Id.* at 10:52–54.

The intelligent device system of Fig. 5 is capable of dynamically allocating multiple, separate RF channels for transmission based on the information throughput of the digital information. "[T]he signal entering the modulator bank 414 is preferably measured via a traffic sensor 412 to determine if the information volume is greater than the normal capacity of, for example, a single modulator. If

the volume is greater, the DSP 420 will, in turn, direct the incoming data to as many modulators as necessary to modulate all data from the combiner 410." *Id.* at 9:46–52. "The digital signal processor (DSP) 420 … determines the number of modulators, or the channel width or widths, needed to modulate the signal incoming to the traffic sensor 412, as well as the number of RF channels, and which RF channels, on which the output of the modulator or modulators is modulated. Note that, for example, where QAM modulation is used, QAM modulation is generally 40 megabits per second, per 6 MHz RF channel, thus requiring the use of two 6 MHz RF channels in order to modulate … 80 megabits per second coming from the digital combiner …. The RF channel frequency is selected from at least two available frequency channels." *Id.* at 9:65–10:10. "[A]n RF system channel detector [239] is preferably in communication with the DSP 420 in order to update the DSP 420 as to the RF channels in use and available." *Id.* at 10:49–51.

B. Receiving Information

When receiving data from the wideband signal distribution system (red path in the annotated Fig. 5), the exemplary system of Fig. 5 recombines the information carried by the separate RF channels into a digital stream for reception by the addressable devices. "The signal entering the intelligent device is preferably split by at least one RF splitter 214, and is then differentiated according

to the information frequency on the incoming carrier." *Id.* at 8:46–49. "The IP portion of the modulated RF signal fed through a second bandpass filter 218 … and the IP portion is then demodulated by at least one demodulator 220. The demodulator 220 strips the RF carrier signal from the digital baseband signal …. Following demodulation, the digital signals may be combined by a digital combiner 212, such as a multiplexer, in order to effectuate a parallel to serial conversion. The output of the digital combiner 212 is a high speed serial digital output, on the order of, for example, up to, or in excess of, several Gbit/sec. The output of the digital combiner 212 is then preferably routed to a splitter, which splitter feeds an outgoing signal to the input pin pairs … of at least one addressable device 202." *Id.* at 11:15–29.

In sum, by modulating digital information into multiple, separate radio frequency channels, the '679 Patent overcomes the physical limits of a single RF channel, which are a consequence of the finite frequency bandwidth of the RF carrier.

Importantly, the invention is directed to using *multiple separate RF channels* to transport a data stream – a specific type of frequency-division multiple access (FDMA). Both independent claims 1 and 12 require modulating digital information into *at least two* RF channels. *See* EX1001, '679 Patent at 12:39–41 (claim 1), 15:39–40 (claim 12). As explained below, the Petition fails because

none of Petitioner's cited art refers to, relates to, or describes multiple, separate RF channels transporting a data stream. To the contrary, all of Petitioner's cited art involves a completely different technology, namely code-division multiple access (CDMA). Unlike FDMA, CMDA uses a *single* radio frequency channel. As Petitioner's own expert explains, in CDMA the data streams "are all broadcasting on *the same RF channel*." EX1002, Wechselberger at ¶ 94 (emphasis added). Thus, Petitioner's art is the polar opposite of the '679 invention.

III. CLAIM CONSTRUCTION UNDER 37 C.F.R. § 42.104(b)(3)

Each of the challenged claims must be given "its broadest reasonable construction in light of the specification of the patent in which it appears." 37 C.F.R. § 42.100(b); *see also Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142 (2016). However, "[e]ven under the broadest reasonable interpretation, the Board's construction cannot be divorced from the specification and the record evidence, and must be consistent with the one that those skilled in the art would reach." *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015) (internal quotation marks omitted). "A construction that … does not reasonably reflect the plain language and disclosure will not pass muster." *Id.*

Petitioner proposes two groups of terms for construction: "RF channel" and "address" (and related terms). In both cases, Petitioner's proposed constructions

are incorrect and unhelpful. As discussed below, Petitioner's proposed constructions attempt to bridge gaps in the prior art by applying an unreasonable reading of the claims. However, even under Petitioner's incorrect constructions, the prior art fails to render the claims obvious. *See* Section IV.

A. "RF Channel"[3]

The term "RF channel" – which appears in every independent claim – requires no construction, as its usage in the specification and claims of the '679 Patent conforms with the ordinary use of that term in the field of radio frequency (RF) telecommunications. As Petitioner concedes, "[t]he specification provides examples of channels, such as 6 MHz wide frequency bands known in the art …." Petition (hereinafter, "Pet.") at 13. For example, the '679 Patent specification states that a "wideband signal distribution system … may allow for distribution of, for example, 29 channels, wherein each channel is 6 MHz in width, and it is known that such channels can handle analog video signals. However, where digital information can be transmitted over the RF channel, each 6 MHz channel can handle, depending on the modulation technique used, in excess of 40 megabits per

[3] Patent Owner provides an identical discussion of the construction of "RF channel" in its preliminary responses to IPR2016-01898, IPR2016-01899, and IPR2016-01900.

second of digital information ….” EX1001, ’679 Patent at 6:50–57; *see also id.* at 10:3–14.[4]

The prosecution history of the ’679 Patent confirms the ordinary use of the term “RF channel.” In relying on U.S. Patent No. 6,005,855 to Zehavi et al. (“Zehavi,” EX2002), the Examiner stated that “Zehavi teaches that the channels may be transmitted using [frequency division multiplexing] … which means that each channel has its own RF frequency, and thus meets the claims.” EX2003, Final Rejection (March 29, 2012) at 5. Thus, Patent Owner submits that the term requires no construction as its meaning would have been clear to a person of ordinary skill in the art at the time of the invention.

Petitioner proposes a construction of the term “RF channel” as “an RF path for transmitting electric signals.” Pet. at 13. Petitioner’s construction is unhelpful and divorced from the intrinsic evidence.

[4] Petitioner also contends that the ’679 Patent discloses “multiple channels multiplexed on the same frequency bands,” citing the patent at 6:62–65. Pet. at 13. Contrary to Petitioner’s contention, the cited passage merely states that “[u]sing advanced modulation techniques will allow the wideband signal distribution system 10 to be expanded up to 60, or more, channels,” i.e., increasing the number of RF channels. EX1001, ’679 Patent at 6:62–64.

First, Petitioner's proposed construction begs for further interpretation of its constituent parts, and thus hinders rather than helps the analysis. Petitioner's proposed construction of "RF channel" is on its face incomplete and ambiguous unless the meaning of "path" is clarified (which the Petition fails to do). Petitioner's proposed construction shifts the analysis from the term of art "RF channel" to the less precise term "path," obfuscating rather than clarifying the scope of the claims. Both the '679 Patent and the cited references freely use the term "RF channel" as a term of art without needing an explanation. *See, e.g.*, EX1001, '679 Patent at 6:50–65; EX1011, Gorsuch at 6:30–33, 10:2–5. Petitioner has not explained what (if any) meaning the term "RF path" would have had to a person of ordinary skill in the art.

Second, Petitioner's proposed construction of "RF channel" is entirely based on extrinsic evidence, and is disconnected from the patent's specification. "Even under the broadest reasonable interpretation, the Board's construction cannot be divorced from the specification and the record evidence …." *Microsoft*, 789 F.3d at 1298 (internal quotation marks omitted). For example, the '679 Patent uses the word "path" only when referring to the transmission path 95 of Fig. 3, which is a signal path internal to the broadband uniform distribution (BUD) unit 38 and completely irrelevant to the meaning of "RF channel." EX1001, '679 Patent at 7:40–63 and Fig. 3. Rather than relying on the patent's specification, Petitioner

arbitrarily picks *one* dictionary definition over the numerous other definitions found in the cited references and then rests on its expert's conclusory statement that those definitions are "representative of the plain and ordinary meaning of this term." EX1002, Wechselberger at ¶ 121. However, the same dictionaries provide alternative definitions that are more consistent with the specification. *See* EX1022, Computer & Internet Dictionary at 4 ("particular frequencies at which radio waves are transmitted"); EX1023, IEEE Standard Dictionary at 4 ("bandwidth required for the transportation of a signal"; "band of frequencies dedicated to a certain service transmitted on the broadband medium"). The Board should thus reject Petitioner's unnecessary and unhelpful cherry-picking of dictionary definitions that ignore the intrinsic record. "[H]eavy reliance on the dictionary divorced from the intrinsic evidence risks transforming the meaning of the claim term to the artisan into the meaning of the term in the abstract, out of its particular context, which is the specification." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1321 (Fed. Cir. 2005).

B. "Address" and "Addressable Device"[5]

The term "address" is also fundamental to the telecommunications field, and does not need construction because the '679 Patent uses the term in its ordinary

[5] Patent Owner provides an identical discussion of the construction of "address" and related terms in its preliminary responses to IPR2016-01898, IPR2016-01899, and IPR2016-01900.

and customary meaning. For example, the specification states that "[t]he addressable device 202 preferably has an address, such as an IP address, assigned thereto, to allow communications directed to that particular address to be delivered thereto." EX1001, '679 Patent at 8:20–23. As Petitioner concedes, "[t]he specification's example of an IP address indicates the '679 patent is using the industry's understanding of the term 'address.'" Pet. at 16. And Petitioner's expert agrees that "any form of addressing is encompassed by the claims." EX1002, Wechselberger at ¶ 127. Thus, the term "address" requires no construction.

Petitioner's proposed construction for "address" is "information identifying a device or location." Pet. at 15. This construction should be rejected because it is inconsistent with both the intrinsic record and the common usage of the term.

First, Petitioner's proposed construction introduces the concept of "location" that is nowhere to be found in the intrinsic record. The word "location" appears only twice in the specification of the '679 Patent: first in the background section, with reference to "TV and video … mov[ing] between locations in a building or campus," and a second time in the discussion of Fig. 5, to indicate that "addressable devices 202 are preferably located at, for example, a desktop location." EX1001, '679 Patent at 1:42–44, 10:31–32. In neither case is an address used to identify a location. Petitioner has not identified a single example

of an address being used to identify a "location."[6] Petitioner states that "internet protocol addresses[] are a series of numbers identifying network locations" (Pet. at 16), but does not explain what the difference is (if any) between a "device" and a "network location." Again, Petitioner's proposed construction shifts the focus from the term of art "address" to the vague term "location."

Second, the purpose of an address is not merely to *identify* a device, but to allow that device to *communicate*. The '679 Patent's specification states that a device's address "allow[s] communications directed to that particular address to be delivered thereto." EX1001, '679 Patent at 8:22–23. As explained in one of the references relied upon by Petitioner, "[e]very computer … has an IP address so it can communicate across the Internet." EX1032 at 1. As Petitioner's expert concedes, "an address … allows a device (or host associated with the device) to distinguish information (e.g., messages) intended for that device from information not intended for that device." EX1002, Wechselberger at ¶ 129. Thus, contrary to Petitioner's contention, an "address" is not just any information that identifies a device for any reason, including a generic "user ID" or "device identifier," or even

[6] Of course, in everyday language a "mailing address" can identify a location, such as a building. However, such a broad interpretation of "address" encompassing nontechnical meanings would be unmoored from the intrinsic record, and thus unreasonable in light of the specification of the '679 Patent.

a telephone number. Pet. at 16; EX1002, Wechselberger at ¶ 129–30. An address is used to communicate. Since Petitioner's proposed construction fails to encompass the ordinary meaning of the term "address" (which allows a device to communicate on the network), Petitioner's proposed construction should be rejected.

Petitioner also proposes a construction of "addressable device" as "a device identifiable by its address." Pet. at 15. This construction is incorrect because, as explained above, *identifying* a device is insufficient; an address must allow a device to *communicate*. Further, a construction of "addressable device" is unnecessary in view of the ordinary meaning of "address" discussed above. Thus, the term "addressable device" should also be given its ordinary and customary meaning.

IV. ARGUMENT

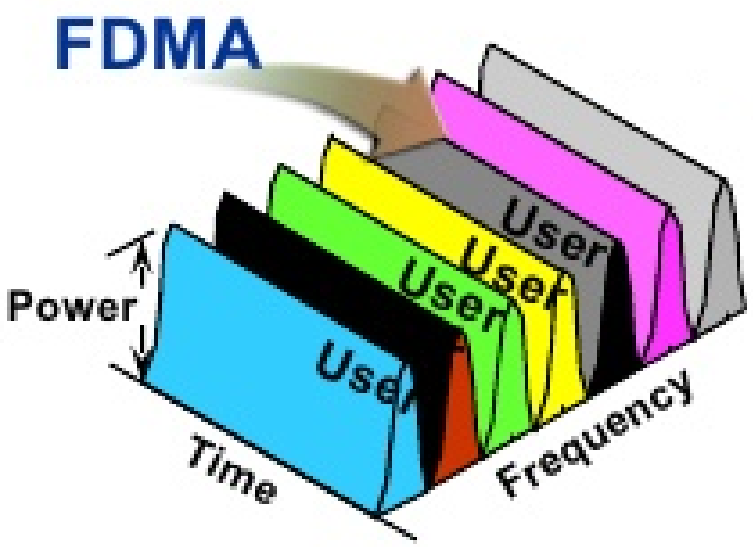
As explained below, the Petition fails to establish that there is a reasonable likelihood that Petitioner would prevail with respect to at least one of the challenged claims. Accordingly, the Board may not institute an *inter partes* review. 37 C.F.R. § 42.108(c).

A. The Prior Art Does Not Teach or Suggest Modulating Digital Information into Multiple, Separate RF Channels (Grounds 1 and 2; All Claims)[7]

The '679 Patent claims an intelligent device that "modulate[s] … digital information into *at least two* separate … RF channels." *See* EX1001, '679 Patent at 12:39–41 (claim 1; emphasis added). This limitation appears in each of the challenged claims. None of the prior art references relied upon in the Petition discloses modulating digital information into *at least two* separate RF channels. Rather, they each rely on a very different technique, called "spread spectrum," which is used in Code Division Multiple Access (CDMA) cellular systems. Instead of transmitting data on separate radio frequency channels, CDMA purposely combines multiple radio transmissions into a *single* radio frequency channel. Therefore, the cited references do not teach modulating digital information into *at least two* separate RF channels, nor has Petitioner shown that a person of ordinary skill in the art would find it obvious to modify the teachings of the prior art to meet those claim limitations. Thus, the cited references fail to render obvious any '679 Patent claim. *See Nike, Inc. v. Adidas AG*, 812 F.3d 1326, 1335 (Fed. Cir. 2016).

[7] Patent Owner provides a substantially identical argument regarding this issue in its preliminary responses to IPR2016-01898, IPR2016-01899, and IPR2016-01900.

As explained in Section II, the ’679 Patent’s inventions use a combination of multiple, separate radio frequency channels to overcome the physical limitations of any individual RF channel. The use of the RF spectrum in the ’679 Patent is akin to the Frequency Division Multiple Access (FDMA) multiplexing technique discussed in the declaration of Petitioner’s expert, Mr. Wechselberger. “In … Frequency Division Multiple Access (FDMA), the RF spectrum is divided into frequency slices and each slice forms a channel to carry a separate data stream.” EX1002, Wechselberger at ¶ 56. The division of the RF spectrum into separate RF channels is visually depicted in the following diagram from Mr. Wechselberger’s declaration:



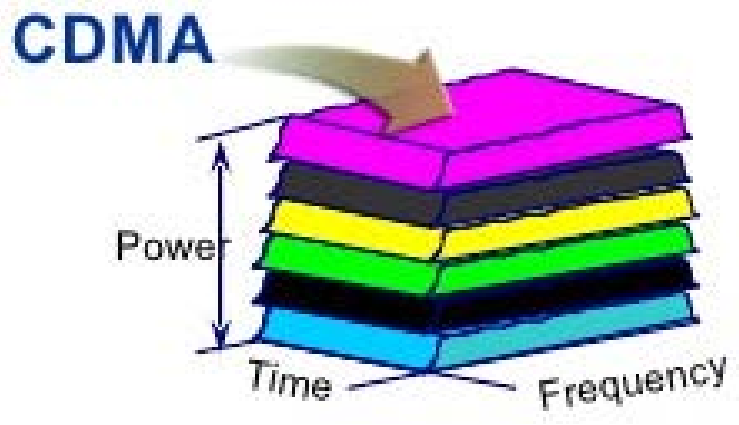
Id. As shown in the diagram, each data stream is assigned to an RF channel on a frequency band that does not change over time. As stated by Mr. Wechselberger, the “type of multiplexing discussed in the ’679 patent[] involves dividing the RF

spectrum into multiple channels for transmission of separate data streams."[8] *Id.* at ¶ 53. Consistent with the specification's description of the invention, the '679 claims recite an "intelligent device" that "modulate[s] … digital information into *at least two* separate … RF channels." *See* EX1001, '679 Patent at 12:39–41 (claim 1; emphasis added).

The four prior art references relied upon in the Petition fail to disclose these limitations, because they are based on an entirely different approach to managing the RF spectrum. Petitioner relies on U.S. Patent No. 5,859,840 ("Tiedemann," EX1009), U.S. Patent No. 5,103,459 ("Gilhousen," EX1010), U.S. Patent No. 6,081,536 ("Gorsuch," EX1011), and U.S. Patent No. 5,414,796 ("Jacobs," EX1012). Each of these references relates to cellular telephone networks using Code Division Multiple Access (CDMA), which is a type of spread-spectrum communication system. EX1009, Tiedemann at 1:23–35; EX1010, Gilhousen at 1:7–18; EX1011, Gorsuch at 2:21–25; EX1012, Jacobs at 4:50–5:13.

[8] Mr. Wechselberger overlooks one difference between the invention of the '679 Patent and conventional FDMA. Whereas in FDMA each RF channel carries a separate data stream, the '679 Patent distributes a digital stream across multiple RF channels. *See* '679 Patent at 12:24–27, 13:1–3 (claim 1). This distinction is not directly relevant to the discussion in this Section.

Instead of assigning each data stream to a separate RF channel, in CDMA "data streams are spread over a wideband channel." EX1002, Wechselberger at ¶ 58. The spreading of all data streams over a single RF channel is visually depicted in the following diagram from Mr. Wechselberger's declaration:



Id. As shown in the diagram, all data streams are simultaneously transmitted over *the same* RF channel.

The IS-95 cellular standard is an example of CDMA spread spectrum technology. EX1002, Wechselberger at ¶ 93. In the IS-95 system, a 1.25 MHz radio frequency channel is capable of carrying 64 data streams, or "coded channels." *Id* at ¶¶ 93–94. Each of the 64 data streams is assigned a so-called "Walsh code." *Id.* at ¶ 93. The use of Walsh codes "allows one particular coded channel to be isolated and decoded from all other coded channels, *even though they are all broadcasting on the same RF channel*." *Id.* at ¶ 94 (emphasis added).

Petitioner's Ground 1 relies only on Tiedemann, Gilhousen and Jacobs, all of which relate to spread spectrum communication and thus do not teach multiple,

separate RF channels. For example, Tiedemann discusses "a CDMA communication system, wherein each channel is provided by spreading the data by a different spreading sequence." EX1009, Tiedemann at 2:30–32. Tiedemann refers to the IS-95 CDMA spread spectrum standard discussed above. EX1009, Tiedemann at 4:62–67; EX1002, Wechselberger at ¶ 141. Petitioner contends that Tiedemann's "primary channel" and "additional channel(s)" meet the claim limitation of "at least two separate dynamically allocated RF channels" in claim 1 of the '679 Patent. Pet. at 42–45; *see also id.* at 33. However, each of Tiedemann's channels "is provided by a unique Walsh spreading sequence," *i.e.*, is a coded channel. EX1009, Tiedemann at 3:65. As explained above, coded channels "are all broadcasting on the same RF channel." EX1002, Wechselberger at ¶ 94. Thus, Tiedemann does not teach or suggest modulating digital information into *at least two* separate RF channels, as required by each of the challenged claims.

Perhaps aware of Tiedemann's obvious shortcomings, Petitioner attempts to rewrite its disclosure. According to Petitioner, "Tiedemann discloses that channels can be assigned using Walsh sequences [and] RF frequency … in CDMA [and] FDMA … systems, respectively." Pet. at 33. However, Tiedemann only makes a passing, non-enabling reference to FDMA. The entirety of Tiedemann's disclosure in this regard is: "[I]f the present invention is applied to a frequency division

multiple access communication system, then the channel assignment messages would specify additional frequencies which will be used to provide data to mobile station 10." EX1009, Tiedemann at 5:39–43. Tiedemann, however, fails to disclose how one would practice the disclosure using multiple, separate RF channels instead of coded channels. Except for the single sentence quoted above, Tiedemann's disclosure is focused on spread spectrum CDMA systems. Tiedemann simply does not disclose the requisite modulation of digital information into multiple, separate RF channels in any system. And as discussed below, the other references relied upon in the Petition also fail to disclose multiple, separate RF channels, as they focus entirely on CDMA spread spectrum communications that combine all data streams on a single radio frequency channel.

Petitioner does not allege that modulating digital information into multiple, separate RF channels in an FDMA system is somehow inherently disclosed by Tiedemann. To the extent Petitioner does argue inherency, it has not explained how a person of ordinary skill would be able to apply Tiedemann's disclosure to an FDMA system, let alone how the result would meet the claims of the '679 Patent. For example, the brief sentence relied upon in the Petition mentions *additional* frequencies. *See* EX1009, Tiedemann at 5:39–43. But Tiedemann is silent as to what would be used as a *primary* RF channel. Tiedemann also mentions a channel assignment message (*id.*), but does not disclose how this message would be sent in

an FDMA system, which functions entirely differently from CDMA. Nor does the Petition fill those gaps by providing an explanation of how Tiedemann's teachings would apply to an FDMA system. Thus, the Petition fails to meet the requirement of "identif[ying], in writing and with particularity … the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim." 35 U.S.C. § 312(a)(3).

Finally, Petitioner does not allege that it would be obvious to apply Tiedemann's teachings to a FDMA system using multiple RF channels. And to the extent Petitioner does argue obviousness, Tiedemann expressly teaches away from the claimed subject matter because it disparages FDMA in favor of CDMA:

> Other multiple access communication techniques, such as … frequency division multiple access (FDMA) … are known in the art. However, the spread spectrum modulation technique of CDMA has significant advantages over these other modulation techniques for multiple access communication systems. … CDMA by its inherent nature of being a wideband signal offers a form of frequency diversity by spreading the signal energy over a wide bandwidth. Therefore, frequency selective fading affects only a small part of the CDMA signal bandwidth. Path diversity is obtained by exploiting the multipath environment through spread spectrum processing by allowing a signal arriving with different propagation delays to be received and processed separately. Furthermore, space or path diversity is obtained by providing multiple signal paths through

> simultaneous links between a mobile user and two or more base stations.

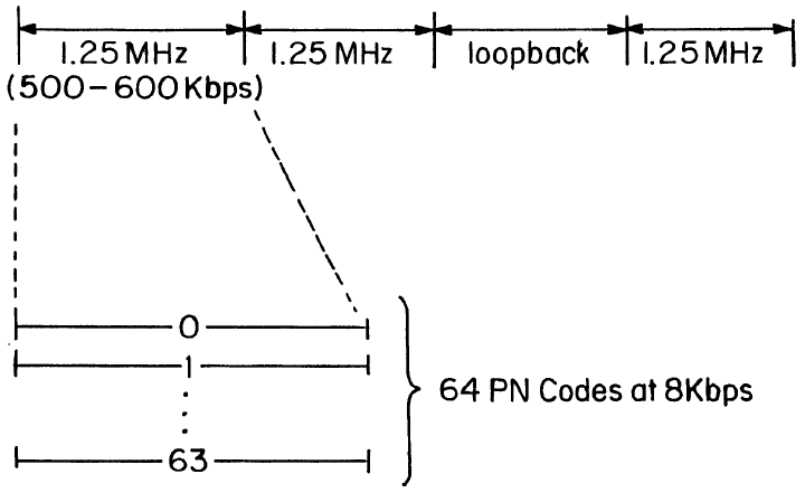
EX1009, Tiedemann at 1:28–58. Thus, Tiedemann itself counsels against using FDMA and instead teaches that CDMA should be adopted because of its "significant advantages." *Id.* at 1:33–34. As Petitioner's expert readily admits, the "CDMA cellular radio transmission protocol [is] favored by Tiedemann." EX1002, Wechselberger at ¶ 260.

Gilhousen fails to remedy Tiedemann's deficiencies. Like Tiedemann, Gilhousen relates to a "system and method for communicating information … using spread spectrum communication signals." EX1010, Gilhousen at 1:10–13. Petitioner does not contend that Gilhousen discloses modulating digital information into *at least two* separate RF channels. *See* Pet. at 42–45. If anything, Gilhousen reinforces the notion, taught by Tiedemann, that spread spectrum CDMA technology was thought to be particularly advantageous at the relevant time.

Jacobs does not fill the gaps in Tiedemann and Gilhousen. Jacobs relates to speech processing, and thus it is only tangentially related to the subject matter of the '679 Patent. EX1012, Jacobs at 1:9–14. Specifically, Jacobs relates to variable rate vocoding, which is "uniquely matched" to CDMA. *Id.* at 2:65–68, 4:53–54. Moreover, FDMA cannot take "full advantage" of the technique. *Id.* at 4:57–65.

Petitioner does not contend that Jacobs discloses modulating digital information into *at least two* separate RF channels. *See* Pet. at 42–45.

Petitioner's Ground 2 additionally relies on Gorsuch. However, like Tiedemann and Gilhousen, Gorsuch relies on "existing cellular signaling such as is available with Code Division Multiple Access (CDMA) type modulated systems." EX1011, Gorsuch at 2:23–25. Fig. 3 of Gorsuch (reproduced below in relevant part) clarifies the distinction between a radio frequency channel, which occupies a 1.25 MHz frequency range, and what Gorsuch calls a "subchannel," with 64 subchannels being transmitted at the same time on a single RF channel:



As stated in Gorsuch, a CDMA transceiver is "capable of being tuned at any given point in time to a given 1.25 MHZ *radio frequency [RF] channel*." EX1011, Gorsuch at 6:32–34 (emphasis added). Each RF channel "is divided into 64 subchannels," each of which "is physically implemented by encoding a transmission with one of a number of different assignable pseudorandom codes."

Id. at 6:47–51. For example, the subchannels "may be defined within a single CDMA RF carrier by using a different orthogonal Walsh codes for each defined subchannel …." *Id.* at 6:51–53.

Importantly, Petitioner's own expert concedes that the coded channels of Tiedemann, Gilhousen, Gorsuch and Jacobs "are all broadcasting on the same RF channel." EX1002, Wechselberger at ¶ 94. Since Tiedemann, Gilhousen, Gorsuch and Jacobs all fail to teach or suggest modulating digital information into *at least two* separate RF channels, the Petition fails to establish that there is a reasonable likelihood that Petitioner would prevail with respect to at least one of the challenged claims.

The result is the same even under Petitioner's proposed construction of "RF channel" as "an RF path for transmitting electric signals." The interpretation of "RF channel" in the '679 Patent claims cannot ignore its use in the rest of the intrinsic record. *See* Section III.A. Thus, even under Petitioner's proposed construction, an "RF path for transmitting electric signals" in the claims of the '679 Patent is still an "RF channel." Here again, Petitioner's expert concedes that the coded channels of Tiedemann, Gilhousen, Gorsuch and Jacobs "are all broadcasting on the same RF channel." EX1002, Wechselberger at ¶ 94. Since each of the references fails to disclose multiple, separate RF channels, the Petition fails as to all claims.

V. CONCLUSION

For at least the foregoing reasons, the Board should not institute *inter partes* review of the ’679 Patent on any of the grounds proposed by Petitioner.

As this is a Preliminary Response, it is not intended as a comprehensive rebuttal to all arguments raised by the Petition. If a trial is instituted, Patent Owner reserves the right to contest the Petition on all grounds permitted under the applicable rules. Moreover, nothing herein should be construed as a concession or admission by Patent Owner as to any fact or argument proffered in the Petition.

Respectfully submitted,

Date: January 5, 2017

by: */Robert Whitman/*

Robert Whitman
Reg. No. 36,966
MISHCON DE REYA NEW YORK LLP
156 Fifth Avenue, Suite 904
New York, New York 10010
e-mail: robert.whitman@mishcon.com

CERTIFICATE OF COMPLIANCE WITH WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), I certify that this paper complies with the type-volume limits of 37 C.F.R. § 42.24(b) because it contains 5,164 words, excluding the parts of this paper that are exempted by 37 C.F.R. § 42.24(a), according to the word processing system used to prepare this paper.

Date: January 5, 2017

by: */Robert Whitman/*

Robert Whitman
Reg. No. 36,966
MISHCON DE REYA NEW YORK LLP
156 Fifth Avenue, Suite 904
New York, New York 10010
e-mail: robert.whitman@mishcon.com

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing document was served on January 5, 2017, by filing this document though PTAB E2E as well as delivering a copy via electronic mail directed to the attorneys of record for Petitioners at the following address:

Wayne O. Stacy
Kathryn A. Juffa
Baker Botts L.L.P.
2001 Ross Avenue, #800
Dallas, TX 75201
wayne.stacy@bakerbotts.com
katie.juffa@bakerbotts.com
DLCiscoChanbondAIA@bakerbotts.com

Sarah J. Guske
Baker Botts L.L.P.
101 California Street, #3070
San Francisco. CA 94111
sarah.guske@bakerbotts.com

The parties have agreed to electronic service in this proceeding.

Date: January 5, 2017

by: */Robert Whitman/*
Robert Whitman
Reg. No. 36,966
MISHCON DE REYA NEW YORK LLP
156 Fifth Avenue, Suite 904
New York, New York 10010
e-mail: robert.whitman@mishcon.com