

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMERICAN HONDA MOTOR CO., INC.,
Petitioner,

v.

NEO WIRELESS LLC,
Patent Owner.

Case IPR2023-00794
Patent 10,833,908

PATENT OWNER'S PRELIMINARY RESPONSE

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EXHIBIT LIST	
2001	Declaration of William P. Alberth, Jr. [Alberth-Decl.]
2002	William P. Alberth, Jr. Curriculum Vitae [Alberth-CV]
2003	In re Neo Wireless, LLC Patent Litigation, 2:22-MD-03034-TGB, Joint Claim Construction Statement [Joint-CC-Statement]
2004	In re Neo Wireless, LLC Patent Litigation, 2:22-MD-03034-TGB, Exhibit A - Agreed Litigation Terms [Agreed-Lit.-Terms]
2005	In re Neo Wireless, LLC Patent Litigation, 2:22-MD-03034-TGB, Exhibit B - Disputed Litigation Terms [Disputed-Lit.-Terms]
2006	In re Neo Wireless, LLC Patent Litigation, 2:22-MD-03034-TGB, Notice of Stipulation Regarding Claim Construction [Stip-Re-CC]
2007	In re Neo Wireless, LLC Patent Litigation, 2:22-MD-03034-TGB, Plaintiff Neo Wireless's Opening Claim Construction Brief [PO-Opening-CC]
2008	3rd Generation Partnership Project 2 "3GPP2," <i>cdma2000 High Rate Packet Data Air Interface Specification</i> , Pgs. 1, 53, 463 (2002) [3GPP2] [3GPP2]
2009	Dell Inc. v. Neo Wireless, LLC, IPR2022-00277, Declaration of Matthew Valenti, Pg. 94 [Valenti-Decl.]
2010	U.S. Patent App. US 2004/0001429 A1 (Pub. Date Jan. 1, 2004) [Ma]
2011	Wikipedia, "Moore's Law" (last visited Mar. 21, 2023) (https://en.wikipedia.org/wiki/Moore%27s_law)

2012	Slide presentation, “History of Processor Performance” et al., <i>on</i> Stephen A. Edwards, “CSEE W3827, Fundamentals of Computer Systems,” Spring 2012 (last visited Mar. 21, 2023) (http://www.cs.columbia.edu/~sedwards/classes/2012/3827-spring/)
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This Petition is a copycat petition seeking joinder to a case (IPR2023-00086) in which institution has already been denied. Patent Owner notes for the panel's convenience that the non-institution arguments in this Preliminary Response essentially repeat the non-institution arguments already successfully raised in the denied target case (IPR2023-00086), just as the present Petition essentially repeated the arguments in the target case's petition. Since the same merits arguments are at issue in this case as in the target case, institution should be denied in this case for the same reasons as in that case.

I. INTRODUCTION

This is the fourth petition that has been filed for inter partes review of the '908 patent. Like the first petition, this Petition has not shown a reasonable likelihood of prevailing at trial on the merits as to any of the claims (1–30) based on any ground in the Petition. Focusing on claim 1, Patent Owner explains in Sections III and IV why Petitioner has not met its burden of prevailing on any challenged claim under any of the two petitioned Grounds (1–2). Finally, Section V addresses why the fact that this fourth Petition, which follows a rejected obviousness challenge in the first petition, and improperly relies upon the denial of the first petition as a hindsight roadmap for its own grounds, further supports a finding that Petitioner has not met its burden to show a reasonable likelihood of showing obviousness.

For these reasons, as further detailed below, institution based on the Petition should be denied under 35 U.S.C. § 314 and Office and Federal Circuit precedent.

II. CLAIM CONSTRUCTION

“[T]he Board may take into consideration statements made by a patent owner or petitioner about claim scope,” and claim construction developments in district court when made of record by parties. CTPG, 46-48.

In related multi-district litigation involving the patent-at-issue in this case, *In re Neo Wireless LLC Patent Litigation* (the “MDL Litigation”), Petitioner is among the accused infringers (the “Defendants”) of the ’908 patent who, along with Patent Owner, submitted terms for construction, and proposed claim constructions for those terms. *See* Ex. 2003 [Joint-CC-Statement] 1, 5-6. Petitioner has distanced itself from the positions taken by its fellow Defendants in the MDL Litigation, but stipulated to be bound by the constructions adopted in the litigation, and will not challenge any such constructions, including if they are adopted in this IPR. Ex. 2006 [Stip-Re-CC].

The claim construction positions relevant to the ’908 patent taken in briefing by the parties in the MDL Litigation are summarized below.

The MDL parties agree that the preamble of claim 1 is limiting and should be given its plain and ordinary meaning. *See* Ex. 2004 [Agreed-Lit.-Terms] 2.

They also agree “configured to” should be construed as “designed to.” *See* Ex.

2007 [PO-Opening-CC] 4. The parties dispute the following:

Claim Language	Proposed Construction of (Patent Owner)	Proposed Construction of Defendants
“wherein the portion of the frequency band used for transmission of the random access signal does not include control channels”	“wherein the portion of the frequency band used for transmission of the random access signal does not overlap with the portions of the frequency band used for control channels”	“wherein the portion of the frequency band used for transmission of the random access signal does not include channels carrying control information.”
“associated with”	Plain and ordinary meaning. No construction necessary.	“identifying”
“random access signal”	Plain and ordinary meaning. No construction necessary.	“direct sequence spread spectrum signal.”

Ex. 2005 [Disputed-Lit-Terms] 1-3.

Patent Owner’s claim construction positions are consistent with its positions here, which applies the plain and ordinary meaning of all relevant terms. The term, “wherein the portion of the frequency band used for transmission of the random access signal does not include control channels,” is found only in dependent claims 4, 14, and 24 so no construction is necessary to resolve this proceeding, and the term need not be construed. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999). Because Patent Owner has consistently advocated

for plain and ordinary meaning, there is no need for supplemental briefing regarding the District Court claim construction.

III. THE PETITION FAILS TO PROVIDE RATIONALES TO COMBINE ITS REFERENCES SO AS TO SATISFY ALL THE LIMITATIONS OF THE CLAIMS (ALL GROUNDS, ALL CLAIMS).

A. Petitioner Fails To Show A Rationale For Its Proposed Combination Of Frank’s Alleged “*Random Access Signal Followed By A Guard Period*” With Kaiser And Gibson.

The claims all require a “*random access signal followed by a guard period.*” Ex. 1001 [’908 patent] cls. 1, 11, 21. The Petition relies exclusively on Frank for this limitation, for all claims and all Grounds. *See* Pet., 36 (“Frank teaches or suggests ‘*transmit[ting], to the base station, a random access signal followed by a guard period in only a portion of the frequency band.*’”), 41 (relying entirely on the analysis of claim 1 for method claim 11), 44 (relying on analysis of element 1.3 for corresponding element 21.2). However, the Petition fails to show even a reasonable likelihood that it would be obvious to combine Frank with Kaiser and Gibson (hereafter, for convenience, the “Kaiser-Gibson” subcombination).

First, the only reason in Frank for using a “*random access signal followed by a guard period*” is that Frank also transmits data on the random access channel (the “RACH”). *See* Section III.A.1 *infra*. But Gibson, the reference the Petition relies on for adding the claimed random access signal “*in only a portion of the frequency band,*” explicitly teaches transmitting **only** the random access signal, not

data, on the RACH. There are many advantages to transmitting exclusively random access signals, not data, on the RACH. In light of those advantages and Gibson's explicit teachings, no reasonable likelihood is shown that a POSITA would have found it obvious to combine Kaiser-Gibson with Frank. **Second**, even if it were shown that a POSITA would have disregarded Gibson's teachings against adding data on its RACH, it would not have been obvious to also include the claimed "*guard period*" on the RACH. *See* Section III.A.2 *infra*. Frank's rationale for including the "*guard period*" was that, when Frank was published in 1999, the base station needed time to process the alleged "*random access signal*." However, by the invention date of the '908 patent in 2004, five years later, increases in processing power meant that the additional processing time provided by Frank's "guard interval" was no longer needed. **Third**, contrary to the Petition's assertion, design incentives and market forces teach away from, not toward, its combination. *See* Section III.A.3-4 *infra*. Increases in computing power, discussed above, rendered the Frank's "guard interval" less needed. Moreover, the growing importance of supporting simultaneous access attempts by many mobile stations made the disadvantages of the "guard interval" even less acceptable than when Frank was written. *See* Section III.A.3 *infra*. **Finally**, the remaining advantages Frank touts (which are parroted in the Petition) do not apply to the proposed Kaiser-Gibson-Frank combination. For these reasons, it would not

have been obvious to combine Petitioner's three references to meet the claims, and this ground cannot support institution.

1. It Would Not Be Obvious To Combine The Alleged "Guard Period" From Frank, Because Frank's Only Reason For Adding The Alleged "Guard Period" Is To Allow Data On Its RACH, And Kaiser-Gibson Would Not Have Data On Its RACH.

Frank lists many supposed advantages to adding its "guard time interval" (the alleged "*guard period*"). See e.g., Ex. 1009 [Frank] Preamble, 6:6-10, 6:20-22. None of these advantages, however, applies to the combination proposed in the Petition. These advantages listed by Frank relate to unmodified Frank's teaching of sending both a "preamble" (the alleged "*random access signal*") followed by a "guard interval" (the alleged "*guard period*") before sending data on the same channel. In particular, Frank explains that its "guard interval" allows for the preamble to be detected and processed before the data arrives when both the preamble and data are sent on the same RACH. Ex. 1009 [Frank] Preamble ("A guard interval (T_G) is preferably inserted between the preamble and data portion of the frame, which enables data detection to occur during an idle period."), *id.*, 6:6-10 ("A guard interval is preferably inserted in the preamble portion of the frame, which enables some data detection to occur before the actual data detection process is started. Consequently, the buffering of data can be minimized."), *id.*, 8:19-22 ("A guard interval is preferably inserted between the preamble and data portion of

the frame, which enables detection of the preamble before the data arrives (requiring less buffering).”). As William Alberth¹ explains, however, none of the rationales for adding Frank’s guard interval would apply if, as is true in the proposed Frank combination with Kaiser-Gibson, data were not sent after the preamble. Ex. 2001 [Alberth-Decl.] ¶35 (“None of the reasons Frank gives for

¹ William Alberth is a proven and credible expert in this field. Ex. 2002 (*curriculum vitae* of Mr. Alberth). In the IPR based on the prior petition challenging these claims, the decision denying review repeatedly found persuasive and credited Mr. Alberth’s testimony in rejecting the merits of that petition’s grounds. *See Dell, Inc. v. Neo Wireless LLC*, IPR2022-00277, Paper 10 (June 21, 2022), at, *e.g.*, 33 (“we also find persuasive Mr. Alberth’s declaration testimony ... We credit Mr. Alberth’s expert opinion”). Mr. Alberth’s testimony has also been found credible and persuasive in challenges to other related patents on wireless technology. *See Dell, Inc. v. Neo Wireless LLC*, IPR2021-01468, Paper 12 (Mar. 14, 2022), at, *e.g.*, 31 (“we find persuasive the declaration testimony of Mr. Alberth”), 32-33 (“we credit the expert declaration testimony of Mr. Alberth”), 45 (“Here, we find persuasive the declaration testimony of Patent Owner’s expert, Mr. Alberth”).

adding its ‘guard interval’ would provide any advantage to that system if not for the fact that Frank’s RACH follows its preamble with data.”).

The Petition acknowledges that the purpose of Frank’s guard interval is to enable detection of the preamble before the arrival of the data. *See* Pet., 18 (“‘guard interval is preferably inserted between the preamble and data portion of the frame’”) *citing* Ex. 1009 [Frank] 8:19-22, 36 (quoting same sentence from Frank). Notably, however, the Petition never states that its combination would include data on the RACH. *Id.*, 21-22 (“combined Kaiser-Gibson-Frank system in which: ... (ii) Frank’s random access preamble is transmitted in a separate shared random-access channel”), 36 (quoting Frank as teaching a guard interval between the preamble and data before arguing “Frank thus teaches that the preamble (*‘random access signal’*) is *‘followed by’* the guard interval (*‘guard period’*).”). As detailed below, there is a good reason Petitioner does not say its combination adds data on the RACH, for doing so would contradict Gibson’s express teachings.

The Petition’s combination relies on Gibson to satisfy the limitation, the “*random access signal ... in only a portion of the frequency band.*” Pet., 34 (“Gibson teaches ‘*transmit[ing] to [a] base station, a random access signal.*’”), 35 (“Specifically, it would have been obvious to include ... Gibson’s separate shared random access channel.”). However, Gibson teaches that the RACH should **only** be used to send the random access signal, **not** data as taught in Frank. Gibson

defines the RACH as follows: “Random-access channel: This uplink control channel is used by mobiles to *request assignment of a traffic channel*. A random access protocol is employed to arbitrate access to this channel.” Ex. 1008 [Gibson] 324.² Gibson is very clear that its RACH should only be used to send the random access signal—and thus, to not be used to for data as taught in Frank. For example, Gibson expressly teaches: “Specifically, the random access channel (RACH) is *only* used by the MSs in the uplink direction *if they request*, for example, a bidirectional SDCCH to be mapped onto an RF channel *to register with the network and set up a call*.” Ex. 1008 [Gibson] 497. Rather than use the same channel both for the initial random access request and for the data required to setup the call, Gibson assigns the mobile station a “*dedicated control channel* for the ensuing call setup” that is used to transmit that data on a completely different frequency than the initial random access request. *See id.*, 319. Thus, Gibson’s RACH is not used to send data.

As Mr. Alberth further explains:

Regarding Figure 17.3 reproduced below, Gibson says “[t]he successful procedure for establishing a call that originates from the mobile station is outlined.” Ex. 1008 [Gibson] 319.

²All bold italics emphasis added unless otherwise noted.

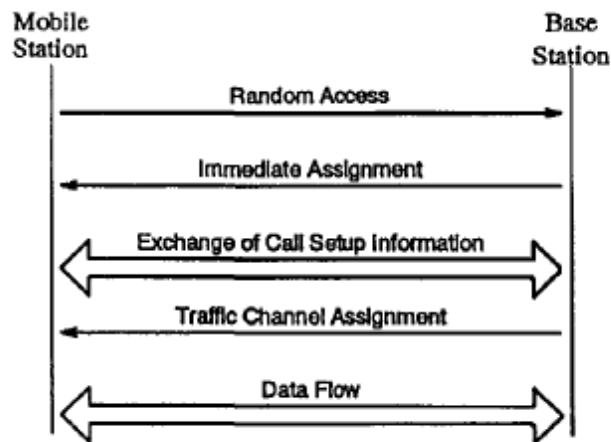


FIGURE 17.3 Mobile-originating call establishment.

Id., 320. Gibson describes the first step for establishing a call is that “[t]he mobile initiates the procedure by transmitting a request on the random-access channel.” *Id.*, 319. Gibson does not describe transmitting any data with this request and indeed elsewhere Gibson states that, “[s]pecifically, the random access channel (RACH) is only used by the MSs in the uplink direction if they request, for example, a bidirectional SDCCH to be mapped onto an RF channel to register with the network and set up a call.” *Id.*, 497. Gibson then teaches that, “[o]nce the base station has received the mobile’s request, it responds with an immediate assignment message that directs the mobile to tune to a dedicated control channel for the ensuing call setup.” *Id.*, 319. It is on this “dedicated control channel” that any data needed for setting up the call would be transmitted from the mobile station to the base station. *See id.* Lastly, Gibson teaches that, “[u]pon completion of the call setup negotiation, a traffic channel, i.e., a frequency in FDMA systems or a time slot in TDMA systems, is assigned by the base station and all future communication takes place on that channel.” *Id.* This procedure is also illustrated in Figure 17.3,

which Gibson states is, “[t]he successful procedure for establishing a call that originates from the mobile station.” *Id.*

Ex. 2001 [Alberth-Decl.] ¶40. Thus, Gibson unambiguously teaches that only the initial random access request, not the data, should be transmitted on the RACH.

See id. All further data needed to set up Gibson’s call is to be transmitted on a “dedicated control channel.” *See id.*

There are very good reasons for this. Mr. Alberth explains the advantage and disadvantages of Frank’s unmodified system in which, unlike Gibson’s teachings, the RACH includes data:

Frank chooses to include data on the same RACH used for the random access request. *See e.g.*, Ex. 1009 [Frank] Preamble, 6:6-10, 8:19-22, Fig. 4.... The advantage of adding data to the RACH is that the data is immediately available to the base station as soon as the random access request is received from the mobile station. However, there are many drawbacks to this approach. This is because putting data on the RACH uses up bandwidth in that channel that could otherwise be used to connect with other mobile stations. This reduces the number of users that can connect to the system at any one time, which can be a very serious problem during busy hours. A POSITA would have been aware that the capacity of the random access system is critical to system performance especially during the busy hour (when the system is used the most, often times traffic rush hour) and on holidays and during natural disasters (when everyone tries to call

friends/family/authorities). This ability to handle a large volume of callers initiating connection simultaneously became, if anything, even more important over time. Frank not only puts data on the RACH, it does so before receiving any acknowledgment from the base station. *Id.*, 9:16-19. Thus, each unsuccessful access attempt takes up bandwidth and produces interference that prevents other mobile stations from connecting. This would have made it less able to handle large call volumes than even other solutions available in 1999.

Ex. 2001 [Alberth-Decl.] ¶35.

This difference between Frank's and Gibson's teachings can be explained with a media analogy: Frank's mobile station is like a reporter who approaches a celebrity, says a brief hello, and then, without waiting for acknowledgment, recites the times and locations at which she wants to have an interview with the celebrity. In contrast, Gibson's mobile station can be analogized to a reporter raising her hand, waiting for acknowledgement, then separately discussing the details of setting up an interview. Frank's approach may lead to a small advantage of increased efficiency, in that there is no need to wait for the conversation to begin, but if the celebrity is busy (if, for example, the reporter is speaking to the celebrity at a press conference with many other reporters), the reporter's rudeness is not only unlikely to elicit an interview, but may also interrupt the statement the celebrity is in the process of making, thus interfering with the conversations of everyone else.

While there may be limited situations where Frank’s approach is superior, when many mobile stations are vying for access to the base station the data Frank puts on its RACH interferes with the communications of other mobile users and severely degrades the capacity of the system. *See id.*

When one reference in a combination teaches away from adding a feature from a different reference, that fact weighs against the combination. *See Novartis AG v. Torrent Pharms, Ltd.*, 853 F.3d 1316, 1327 (Fed. Cir. 2017) (“Where the prior art contains ‘apparently conflicting’ teachings (i.e., where some references teach the combination and others teach away from it) each reference must be considered ‘for its power to suggest solutions to an artisan of ordinary skill . . . consider[ing] the degree to which one reference might accurately discredit another.’” *Id.* at 1165 (quoting *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991)); *see also Winner Int’l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349-1350 (Fed. Cir. 2000) (a finding that a reference teaches away from adding a feature of another reference “alone can defeat [an] obviousness claim.”), *Institut Pasteur v. Focarino*, 738 F.3d 1337, 1345 (Fed. Cir. 2013) (finding reference’s teaching away “counts significantly against finding a motivation” to combine). That is so here. Gibson discredits Frank’s approach of combining the preamble and data on the same channel, which is the only reason Frank has for including the alleged “guard period.” The Petition ignores and fails to address the conflict between these

teachings, and they accordingly foreclose obviousness. *See Novartis*, 853 F.3d at 1327. Furthermore, as discussed above, the POSITA would have been aware of still other reasons discrediting this combination in the context of Gibson’s teachings. Because Gibson’s teachings contradict and teach away from sending the random access request on the same channel as data, and because of the inherent drawbacks of sending data on the RACH, Petitioner has failed to show a reasonable likelihood that it would have been obvious for a POSITA to combine Frank with Kaiser-Gibson. Since Frank is the only reference that allegedly teaches the claimed “*guard period*,” the proposed combination of Kaiser-Gibson-Frank has not been shown to render the claims of the ’908 patent obvious. This is a sufficient reason that the Petition should be denied.

2. Even If Data Were To Be Transmitted On The RACH Of
Petitioner’s Combination, There Is No Reason To Include The
Alleged “*Guard Period*.”

Even assuming *arguendo* that the POSITA **would** follow Frank’s teachings and add data to Kaiser-Gibson’s RACH in the proposed combination, there is no support for a reason to **also** include Frank’s “guard interval” as of the ’908 patent’s invention date. The purpose of the “guard interval” in Frank was to allow time to process the preamble before receiving the data. By 2004 faster processors were available that could do this without a “guard interval.” The POSITA in 2004,

therefore, would have simply used a faster processor, and not have found it obvious to instead take up valuable bandwidth with a guard interval.

Frank's stated reason for adding its "guard time interval" (the alleged "*guard period*") after the preamble (the alleged "*random access signal*") is to allow processing of the preamble to finish before receiving the data. Ex. 1009 [Frank] 6:20-22 ("Yet another important technical advantage of the present invention is that all necessary *post-processing*, such as for example, *signature decoding, can be accomplished during a guard period.*"), 8:19-22 ("A guard interval is preferably inserted between the preamble and data portion of the frame, which *enables detection of the preamble before the data arrives* (requiring less buffering)."), 9:24-27 ("*during the guard time interval, T_G , the signature detection processing can be performed at the base station receiver* (e.g., by using a fast Walsh-Hadamard transformation), and the base station can determine more quickly whether a random access request has been made."), 13:11-13 ("the use of a guard time interval, T_G , between the random access request preamble and data portion *enables the system 100 to accomplish all of the above-described post-processing during this idle period.*"). As Mr. Alberth explains, in the view of the POSITA at the time of the claimed invention, "Frank's primary motivation for incorporating a guard interval between its preamble and its data is to allow the base

station sufficient time to process the preamble before the data arrives.” Ex. 2001 [Alberth-Decl.] ¶36.

Frank’s priority date is May 15, 1998. Thus, Frank was directed at solving problems that the POSITA would have understood to be present in that time and when Frank was published in 1999. *See* Ex. 1009 [Frank]. It is undisputed that the ’908 patent has a priority date almost six years after Frank, on January 29, 2004. Pet., 4. As Mr. Alberth describes below, developments in processing speed during this time allowed a POSITA to use processing power to preferably solve the problem Frank solved using the alleged “*guard period*.”

Frank’s primary motivation for incorporating a guard interval between its preamble and its data is to allow the base station sufficient time to process the preamble before the data arrives. *See* Ex. 1009 [Frank] 6:20-22, 8:19-22, 9:24-27, 13:11-13. This may have been a concern in some limited circumstances in May of 1998 when Frank was first written. However, by 2004, the priority date of the ’908 patent, this was no longer a concern. Moore’s law, which observes that the density of transistors in an integrated circuit doubles every two years, accurately described the advance in computing power between 1998 and 2004. *See* https://en.wikipedia.org/wiki/Moore%27s_law. [Ex. 2011]. In 1998 the typical base station might have, for example, had the equivalent of a Pentium 2 processor with 7.5 million transistors. By 2004 an Intel Itanium 2 processor could have more than 220 million transistors.

Clock frequency improved as well with processing in 1998 running at around 600Mhz versus in excess of 2Ghz by 2004. <http://www.cs.columbia.edu/~sedwards/classes/2012/3827-spring/advanced-arch-2011.pdf> [Ex. 2012].

Processing power as anticipated by Frank in base stations was simply not a concern at the time of invention because faster processors were readily available due to the advancement of semiconductor technology and Moore's law. Thus, even if a POSITA would be willing to accept the significant drawbacks of putting data on the RACH, there would be no reason to include Frank's "guard time interval." A POSITA could simply have used a faster processor that could complete the detection and decoding of the preamble fast enough so the base station would be ready for the data arriving immediately thereafter.

Ex. 2001 [Alberth-Decl.] ¶37-38. It is important to note that Frank teaches the use and placement of its guard interval for a completely different reason than the '908 patent discloses the use and placement of the claimed "*guard period*."³

³ The '908 patent discloses different reasons for including the claimed "*guard period*." See e.g., Ex. 1001 ['908 patent] 8:4-11 ("In one embodiment, guard periods are added to the DSSS signal which overlaps with one MC symbol, as shown by DSSS signal #p 1308 in FIG. 13. The guard periods ensure that a well-designed DSSS sequence (with low PAR in frequency domain) causes little

A feature in the prior art, such as Frank’s “guard interval,” that might have been obvious to combine at one point in time is not necessarily obvious later, if technological advances have opened other alternatives that easily solve the problems that prior art feature was designed to solve. This is because knowledge of technological advances obviating the problem a reference was designed to solve is imputed on the POSITA and bears on whether a POSITA would have found it obvious to employ that feature for substantially the purpose taught by the prior art ***at the time of the invention***. See, e.g., *Fisher & Paykel Healthcare Ltd. v. ResMed Ltd.*, IPR2017-00059, Paper 27, 41 (Mar. 7, 2018) (motivation to combine analysis includes consideration of “what knowledge [the POSITA] would have had. ***Included in that knowledge [are] advancements in technology in the field of art***

interference with the MC subcarriers even when there is time misalignment in a DSSS signal relative to the OFDM symbol period.”). These reasons have nothing to with processing preambles, and thus cannot be solved with more computing power, and are not taught by Frank or any other raised reference, alone or in combination. The teachings of the ’908 patent’s own specification cannot be used against the ’908 claims to find unpatentability, so the motivation disclosed by the patent cannot be a basis for the combination. See *In re Lee*, 277 F.3d 1338, 1344 (Fed. Cir. 2002).

*to which the [// patent pertains.]”); see also Panduit Corp. v. Dennison Mfg. Co., 810 F.2d 1561, 1566 (Fed. Cir. 1987) (obviousness analysis requires the factfinder to “step backward in time and into the shoes worn by [a POSITA]” at the time of invention to “determine whether the patent challenger has convincingly established...that the claimed invention as a whole would be obvious at *that* time to *that* person.”).*

The addition of Frank’s guard interval is not without cost. The time used as a guard interval is not available for transmitting other signals and thus reduces available transmission resources. Mr. Alberth explains:

Transmission resources, which is defined as time or bandwidth that can be used to transmit signals, is a limited commodity in a mobile communications system. Systems are generally designed to maximize the efficient use of transmission resources. Frank proposes a .25ms long guard interval for a 10ms long preamble. Ex. 1009 [Frank] 10:3-5. This effectively means that the RACH takes up about 2.5% more transmission resources than necessary. This is a significant amount and a POSITA in 2004 would have chosen to use a faster processor rather than incurred this transmission resource penalty.

Ex. 2001 [Alberth-Decl.] ¶38. In a world where processing power is cheap and transmission resources are expensive, like the world in 2004, Frank’s rationale for its guard interval did not apply to the combination proposed. A POSITA would

have simply used a faster processor that could have fully processed the preamble before the arrival of the data. *See id.*

Further evidence that Frank's teachings regarding its "guard interval" did not apply in 2004 can be found in 3GPP2. This system, developed in 2002, was similar to Frank in that it sent data on the RACH. However, it sent that data immediately after the preamble without the use of a "guard interval." As Mr. Alberth explains, this example helps confirm that processing power had developed enough that the "guard interval" was no longer necessary, three years after Frank was published and two years before the priority date of the '908 patent:

Frank was published on November 25, 1999. Ex. 1009 [Frank]. The priority date of the '908 patent is January 29, 2004. Ex. 1001 ['908 patent]. 3GPP2 was developed after Frank but before the invention date. Ex. 2008 [3GPP2] 1 ("Date: October 25, 2002"). Like Frank, 3GPP2 standards described a CDMA system. *Id.*, 53 ("This standard was prepared by Technical Specification Group C of the Third Generation Partnership Project 2 (3GPP2). This standard is evolved from and is a companion to the cdma2000 standards."). Also like Frank, it transmitted data on its RACH. *Id.*, 463 ("The output power of the Pilot Channel during the preamble portion of an access probe is higher than it is during the data portion of the probe by an amount such that the total output power of the preamble and data portions of the access probe are the same as shown in Figure 9.2.1.3.2-1."). However, it did not include a "guard time interval" but rather sent the

data immediately after the preamble. *Id.* This is seen most clearly in Figure 9.2.1.3.2-1 shown below:

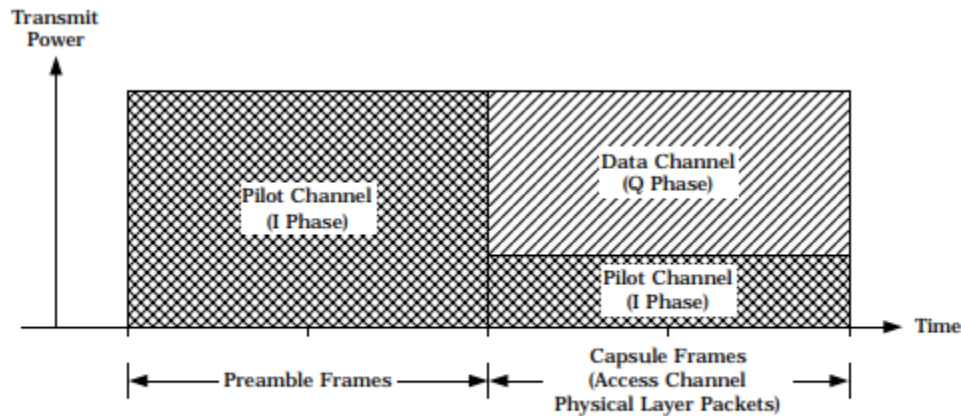


Figure 9.2.1.3.2-1. Example of an Access Probe

Id. The designers of 3GPP2 likely did not include the guard interval because they realized that the alleged problems identified by Frank were already solved with simple processing power. This supports my belief that by 2002, at the latest, it would no longer have been obvious to include a “guard time” even in situations where data is transmitted on the RACH.

Ex. 2001 [Alberth-Decl.] ¶39. Said another way, if it were obviously beneficial to include a “guard interval” between the preamble and data in a CDMA system, the standards setting committee for 3GPP2 would presumably have done so. That they did not do so is evidence of nonobviousness. Significantly, and more broadly speaking, there is no evidence that *any* commercially available system since

Frank's timeframe has added a "guard interval" for the purpose of allowing the base station sufficient time to process the preamble.

Thus, even if, *arguendo*, the POSITA were to modify Kaiser-Gibson in light of Frank to include data on its RACH despite Gibson's express teachings to the contrary, the POSITA in 2004 would not have included Frank's "guard interval" (the alleged "*guard period*"). The alleged problem had been solved by increased computing power, and no obvious reason is shown for a POSITA to include a "*guard period*" in a combination of Kaiser, Gibson and Frank. For this additional reason, this ground cannot support institution.

3. "Design Incentives And Market Forces" Discourage, Rather Than Encourage, Adding Frank's Features To Kaiser-Gibson Because Doing So Impedes The Ability Of Multiple Mobile Stations To Simultaneously Connect To The Network.

Neither the Petition's generic statements about "design incentives and market forces," nor its uncritical recitation of Frank's supposed advantages, provide adequate motivation to combine Frank with Kaiser-Gibson. Instead, they discourage including Frank in the combination.

The Petition argues, citing *KSR*, that "'design incentives and other market forces' driving the development of the next generation (3G) systems by January 2004, would have motivated a POSA to make this combination." Pet., 22.

However, developments in the field of computing teach *against* the combination:

at the time of the claimed invention, the problems encountered by Frank had already been solved by faster and cheaper computational power, eliminating the alleged basis for the proposed combination. *See* Section III.A.2 *supra*.

Furthermore, the design incentives and market forces were pushing towards more reliable systems that could accommodate large numbers of users simultaneously attempting to connect to the network. Ex. 2001 [Alberth-Decl.] ¶35 (“A POSITA would have been aware that the capacity of the random access system is critical to system performance especially during the busy hour (when the system is used the most, often times traffic rush hour) and on holidays and during natural disasters (when everyone tries to call friends/family/authorities).”). Indeed, the Petition itself acknowledges that “a key objective of 3G networks was to support and contend with increased user traffic.” Pet., 22 *citing* Ex. 1007 [Kaiser] 1; Ex. 1008 [Gibson] 523; Ex. 1009 [Frank] 1:18-28. Adding data onto the RACH, as suggested by Frank, would have decreased rather than increased the capacity of the network. Ex. 2001 [Alberth-Decl.] ¶35 (“putting data on the RACH uses up bandwidth in that channel that could otherwise be used to connect with other mobile stations”).

Thus, contrary to the Petition’s unsupported assertions, the record shows only that “design incentives and other market forces” would have discouraged, not supported, a combination with Frank.

4. The Petition's Unquestioning Recital Of Frank's Own
Purported Advantages Over Other Systems Fails To Address Its
Deficiencies Relative To Kaiser-Gibson.

None of Petitioner's attempts to provide additional reasons to combine has merit.

First, Petitioner takes Frank's stated advantages out of context. The Petition repeats, without analysis, Frank's claim that it is "designed to address the 'much higher traffic density of random-access channels (RACHs)' resulting in 'increased collisions and access failures' in 3G systems such as UMTS." Pet., 23 *citing* Ex. 1009 [Frank] 1:12-28. However, this claim cannot support the proposed combination with Gibson. As Mr. Alberth explains in detail, Frank's teachings would actually **increase** collisions and access failures relative to the unmodified Gibson, because they would crowd the RACH with data. Ex. 2001 [Alberth-Decl.] ¶35 ("each unsuccessful access attempt [caused by random access requests colliding with data] takes up bandwidth and produces interference that prevents other mobile stations from connecting").

To be sure, Frank asserts that its "random access request rate can be increased in comparison to other random access approaches." Ex. 1009 [Frank] 7:5-6. But all the prior approaches Frank is comparing itself against inefficiently send data on the RACH, which is like Frank but **unlike** Gibson. *See e.g., id.*, 2:1-3 (comparing Frank's system to random access approaches described in two

commonly assigned patent applications). For example, the prior art systems Frank cites shown in Frank's Figures 1 and 3 clearly show data being sent immediately after the preamble (the alleged "*random access request*").

FIG. 1

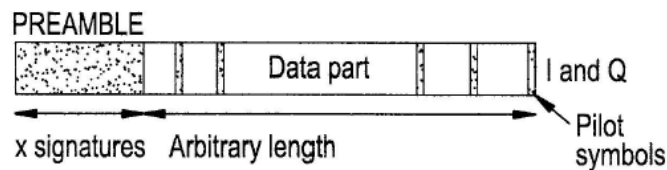
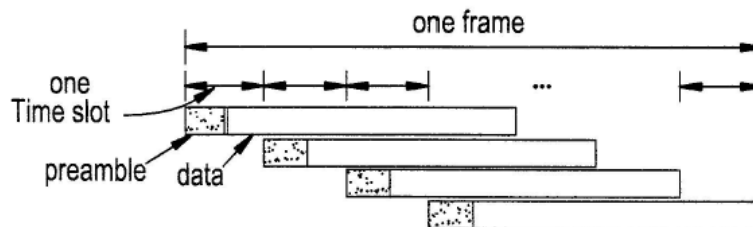


FIG. 3



Ex. 1009 [Frank] Figures 1, 3; *see also id.*, 7:15-20 (describing Frank Figures 1-3 as illustrating existing frame structures for random access requests). Even Frank's Figure 2 shows the data and preamble on branches *of the same channel*. *Id.*, 3:21-23 ("Using the frame structure shown, the data portion is transmitted on the I branch of the channel, and the preamble/pilot is transmitted on the Q branch."). None of the prior art that Frank supposedly improved upon used Gibson's method of assigning the mobile stations a "dedicated control channel for ensuing call

setup.” *Compare* Ex. 1008 [Gibson] 319. Even assuming Frank was better at addressing “increased collisions and access failures” than the random access protocols described in its other commonly owned patent applications, there is no evidence that this provides any advantages over Gibson’s teachings.

Thus, there would have been no reason to replace Gibson’s already-tested method with Frank’s untested techniques. Ex. 2001 [Alberth-Dec1.] ¶35 (“Frank provides no evidence that they have actually solved any of the problems it identifies as it gives no simulations showing capacity of the RACH or the method in real world situations. Without said simulations this method would never gain traction in the standards community. Gibson teaches a dedicated RACH, which was known at the time.”). The Petition’s rote recitation of this supposed advantage stated in Frank does not provide any motivation to combine Frank with Kaiser-Gibson.

Next, the Petition repeats, in no discernable order, eight quotes from Frank allegedly containing “express teachings that would have further motivated the combination and provide independent bases to support combining Frank with Kaiser and Gibson.” Pet., 23-24. Below, supported by Mr. Alberth’s detailed technical analysis, are the reasons each of these would not offer the advantages alleged by Petitioner in the context of the proposed combination. Each quotation is addressed below with similar ones grouped and considered together.

First, the Petition quotes Frank's claim that it is superior to prior art systems because "each portion of the random access request has to fulfill only one function and can thus be optimally designed for that respective task." Pet., 23 *citing* Ex. 1009 [Franks] 6:14-16. Here, the two portions of the random access request Frank is referring to are the preamble and the data. Ex. 1009 [Franks] 6:2-4 ("In accordance with the preferred embodiment of the present invention, an uplink common physical channel (random access channel) frame structure is provided with a separate preamble and data portion."). Thus, Frank's comparison is to systems that have both a preamble and data in a unitary random access request. Gibson, however, already separates its random access signal from the data, which is located on a "dedicated control channel." Ex. 1008 [Gibson] 319. Thus, like in Frank, Gibson can already design both the random access signal and data to optimally accomplish their respective tasks. Ex. 2001 [Alberth-Decl.] ¶44 ("Gibson could design its random access signal and the data for call setup to optimally fulfill their designed functions just as well or better than Frank could do so."). This supposed advantage of Frank provides no motivation to combine it with Kaiser-Gibson.

The Petition next claims Frank provides the advantages "that all necessary post-processing, such as for example, signature decoding, can be accomplished during the guard period," which "minimizes 'the random access request

processing delay,” and allows “‘less buffering’ as a result of the guard period.”

Pet., 23 *citing* Ex. 1009 [Franks] 6:7-10, 6:20-24, 8:19-22. As already discussed above, even if these supposed advantages existed in 1998 when Frank was written, they were no longer relevant in 2004, when operation of Moore’s law had provided more than enough computing power to process the decoding of the signature of the random access request. *See* Section III.A.2 *supra*. Thus, these teachings also provide no motivation to combine Frank with Kaiser-Gibson.

Next, the Petition asserts that including Frank “simplifies ‘the hardware design for random access request detection.’” Pet., 23 *citing* Ex. 1009 [Franks] 6:20-24. This alleged advantage is the most far afield from the invention yet, highlighting the shallowness of the Petition’s analysis. The basis of Frank’s claims to simplify the hardware design for random access detection is that Frank reuses RAKE receivers that are also used to decode data traffic. Ex. 1009 [Frank] 6:29-32 (“a pool of RAKE receivers or RAKE fingers can be assigned or shared for both the common physical channel (random access data packet) and dedicated physical channel (traffic channel), which minimizes the amount of hardware required.”). But, as Mr. Alberth explains, neither Kaiser nor Gibson use RAKE receivers, so the addition of Frank would complicate, not simplify, the combination:

Frank discusses in detail its use of RAKE receivers or RAKE fingers to decode its RACH. *See e.g.*, Ex. 1009 [Franks] 4:22-30, 6:20-24,

9:27-32, 12:12-30. This is apparently the basis for Dr. Cimini's claim that Frank "simplifies 'the hardware design for random access request detection.'" Ex. 1003 [Cimini-Decl.] ¶83 *citing* Ex. 1009 [Franks] 6:20-24. A RAKE receiver is one hardware option for compensating for multipath interference in CDMA systems where symbols are very short and the transmission rate is very high. Frank asserts that its random access design is advantageous because it uses the RAKE receiver used to decode channel traffic to decode the RACH. *Id.*, 6:20-24. Kaiser, which uses longer OFDM symbols, does not use a RAKE receiver but rather a MLSE (maximum-likelihood sequence estimation) to decode the data of a single user. *See e.g.*, Ex. 1007 [Kaiser] 1 ("For joint detection of the data of a single user a low complex maximum-likelihood sequence estimation (MLSE) is applied."), 2 ("Joint detection with MLSE is applied for superimposed data of a user."). Thus, applying Frank's teaching of using a RAKE receiver to decode the random access signal would require more hardware, not less. I see no evidence that the combination of Frank with Kaiser-Gibson "simplifies the hardware design for random access request detection" as Dr. Cimini [Petitioner's expert] claims.

Ex. 2001 [Alberth-Decl.] ¶45. Since Kaiser-Gibson does not use a RAKE receiver, the addition of Frank's hardware design would require adding additional hardware. *See id.* This would motivate a POSITA to reject Frank from the combination of Kaiser-Gibson rather than add it.

Next, the Petition parrots Frank’s claim of ““reduc[ing] the MS’s transmitted power.”” Pet., 23 *citing* Ex. 1009 [Franks] 9:19-23. Even Frank admits, however, that any reduction in power would be small. Ex. 1009 [Franks] 9:19-23 (“This novel random access frame structure and method of use can reduce the MS’s transmitted power (e.g., *albeit slightly*, by interrupting the transmission during the interval between the preamble and data portion of the random access request).”). More importantly, as Mr. Alberth explains below, this reduction in power is nonexistent when compared with the existing Kaiser-Gibson combination:

The power the mobile station uses to transmit the random access request itself is not dependent on Frank’s frame structure but rather on the signal strength needed for the base station to detect the request. Frank claims a “slight[er]” power savings because there is an interruption between the preamble and data portion of the random access request. Ex. 1009 [Franks] 9:19-23. The interruption in transmission between the preamble and data may provide some tiny power savings relative to sending a null signal between the preamble and data portion of the Frank’s random access request. However, as I discuss above, Gibson does not send data as part of the random access request. Moreover, Gibson’s mobile station waits for the base station to respond to its access request with an “immediate assignment” of a “dedicated control channel for the ensuing call setup” before transmitting any data. Ex. 1008 [Gibson] 319. Thus, Gibson does not need to incorporate Frank in order to cease transmission between the

random access request and sending the data needed to complete the call. If the data signal were sent immediately after the preamble the power requirement would be the same as Frank and possibly slightly less (the logic circuitry would not need to be active during the guard period) than the proposed solution. So, while Frank may save a tiny amount of power by not transmitting during the guard period, the same savings can be realized by just sending the data immediately after the preamble. Also, any savings in power comes at the expense of transmission resources. As I explain above, transmission resources are valuable and a “slight” power savings would not be worth the waste of transmission resources. A POSITA would not be motivated to combine Frank with Kaiser-Gibson by a desire to reduce the mobile station’s transmit power.

Ex. 2001 [Alberth-Decl.] ¶46. Frank’s frame structure does not increase the efficiency of the mobile station’s transmitter such that the base station can detect the random access request with a less power. *See id.* Any small decrease in power usage would only be relative to a hypothetical system and comes at a cost of wasting transmission resources.

Finally, the Petition repeats without analysis Frank’s claim that its “‘random access request can be aligned exactly to that of an existing system’s frame slot scheme...’ and ‘the base station can determine more quickly whether a random access request has been made.’” *See* Pet., 23-24 *citing* Ex. 1009 [Frank] 9:22-23, 9:24-27. However, the Petition ignores the fact that that these features are already

present in the Kaiser-Gibson combination, and that the addition of Frank would be expected to *reduce* the performance of the network. As Mr. Alberth explains:

Gibson's RACH is already broadly aligned with the existing frame slot to the extent it implements the well-known slotted ALOHA protocol. Frank's attempt to force random access requests to happen at frame boundaries unnecessarily reduces the opportunities for a handset to submit a random access request. This reduces the ability of the network to handle high volume call situations such as busy hours, holidays, and disasters. Dr. Cimini [Petitioner's expert] also says that combining Frank is advantageous because "the base station can determine more quickly whether a random access request has been made." Ex. 1003 [Cimini-Decl.] ¶83 *citing* Ex. 1009, 9:24-27. However, since Gibson's RACH is a designated portion of the frequency band, Gibson already can rapidly discern whether a random access request has been made.

Ex. 2001 [Alberth-Decl.] ¶47. No evidence supports finding that this advantage supports the proposed combination. In sum, the Petition merely copied Frank's statements about its advantages, without scrutiny of whether the alleged advantages would apply to the particular combination proposed by Petitioner. They would not.

The Petition attempts to support obviousness with the declaration of Dr. Cimini. However, the testimony in the Cimini declaration is an *exact copy* of the alleged motivations to combine provided in the Petition. *Compare* Pet., 23-24 *with*

Ex. 1003 [Cimini-Decl.] ¶83. As in a prior IPR challenging this very patent, the Petitioner’s expert’s declaration should be given little weight. *Dell Inc. v. Neo Wireless LLC*, IPR2022-00277, Paper 10, 33 (June 21, 2022) (denying institution) (“Petitioner’s conclusory arguments and cited evidence for limitation [1d] do not provide a basis to accord this opinion less weight. For instance, [Petitioner’s expert] Dr. Valenti’s declaration testimony regarding limitation [1d] closely mirrors the attorney arguments set forth in the Petition.”). It is well-established that “[e]xpert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.” *ARRIS*, IPR2019-01586, Paper 7, 26 (citing 37 C.F.R. § 42.65(a)); *see also Elbit Sys. of Am., LLC v. Thales Visionix, Inc.*, 881 F.3d 1354, 1358 (Fed. Cir. 2018) (affirming PTAB nonobviousness determination, stating that although petitioner’s expert testimony was the opposite of the Board’s finding, “[t]he PTAB [i]s entitled to weigh the credibility of the witnesses,” and therefore to assign the petitioner’s evidence “little weight” on the basis that it was “unsupported”).⁴

⁴ Recent Board precedent confirms that the rejection of the petitioner’s testimony in *Dell* was exactly correct and that this testimony should likewise be given little or no weight. *Xerox Corp. v. Bytemark*, IPR2022-00624, Paper 9, 15 (Aug. 24, 2022), designated precedential on February 10, 2023, holds that expert

The Petition has thus failed to show a reasonable likelihood that a POSITA would be motivated to combine Frank with Kaiser-Gibson to meet the “*random access signal followed by a guard period*” as required by the claims. For this additional reason, this ground cannot support institution.

B. Petitioner’s Combination Of Frank With Kaiser-Gibson Would Be Beyond The Skills Of A POSITA.

1. The Level Of Ordinary Skill Proposed By Petitioner’s Declarant Is Unrealistically High.

Even if the POSITA would have been motivated to combine Kaiser-Gibson with Frank as proposed by the Petition, she would not have had the skill to do so—even given the Petition’s unrealistically high level of ordinary skill in the art, which is not even backed by its own declarant. There is no showing that the POSITA with a more realistic level of skill would have a reasonable expectation of success in combining these disparate systems.

testimony that “merely repeats, *verbatim*, the conclusory assertions for which it is offered to support” and does ““not cite to any additional supporting evidence or provide any technical reasoning to support his statement,” should be “entitled to little weight.” *Id.* Likewise, Dr. Cimini’s testimony here is unpersuasive because it adds no technical reasoning to the statements copied from the Petitioner.

The Petition asserts that, “[a] person of ordinary skill in the art (“POSA”) would have a bachelor’s degree in electrical engineering, computer engineering, computer science, or an equivalent field, or an *advanced degree in those fields, as well as at least 3-5 years of academic or industry experience* in mobile wireless communications, or comparable industry experience.” Pet., 11. Thus, an electrical engineer with a doctorate and five years of experience is considered of *ordinary* skill by the Petition. This proposed level of skill is even higher than proposed by its declarant Dr. Cimini, which itself is unrealistically high. Dr. Cimini asserts that

[A] person of ordinary skill in the art of the ’908 patent ... would have a B.S. degree in electrical engineering, computer engineering, or computer science, or an equivalent field, as well as at least 3-5 years of academic or industry experience in mobile wireless communications, or comparable industry experience. A greater amount of education, e.g., a doctorate in electrical engineering, computer engineering, computer science, or an equivalent field would also qualify as a POSA for the ’908 patent in lieu of a B.S. degree. Experience could take the place of some formal training, as domain knowledge may be learned on the job.

Ex. 1003 [Cimini-Decl.] ¶40. Thus, the engineer with a doctorate and five years of experience would exceed Dr. Cimini’s definition of ordinary skill but still be considered just “ordinary” by the Petitioner. There is simply no support for the Petition’s proposed level of ordinary skill in the art.

Neither Petitioner's nor Dr. Cimini's proposed level of ordinary skill can be reconciled with the contrasting level of ordinary skill proposed in the prior petition regarding this patent. In that case, the petitioner proposed:

A person of ordinary skill in the art (POSITA) relating to, and at the time of, the Priority Date would have been someone with at least a Bachelor's degree in an academic area emphasizing electrical engineering or a similar discipline, and at least two years of experience in the field working with, teaching, or researching wireless communication networks. Superior education could compensate for a deficiency in work experience, and *vice-versa*.

Ex. 2009 [Valenti-Decl.] ¶23. As Mr. Alberth explains below, the level of skill in the art proposed in that case by Dr. Valenti is more valid, given the experience level of those working in the field at the time:

In 2004 many of the professionals working in the wireless communications space had only a couple years of experience after having graduated with an undergraduate degree in electrical engineering or a similar discipline. Mobile communications was a fast-growing field that necessarily attracted many newcomers to the field. Certainly it was uncommon for working professionals in the field to have doctorate degrees and such advanced education would be typical of someone with more than ordinary skill in the art. For example, Dr. Stefan Kaiser, the author of the Kaiser reference (Ex. 1007), at the time he wrote this paper had a PhD and five years of experience. Under the Petition's standard he would be just one of

“ordinary” skill. Dr. Jerry Gibson, who was editor in chief of the Gibson reference (Ex. 1008) was the chairman of the electrical engineering department at Southern Methodist University. Both Drs. Kaiser and Gibson clearly had more than ordinary skill in the art.

Ex. 2001 [Alberth-Decl.] ¶22. In addition, Mr. Alberth explains, the types of problems typically encountered in the field were of the type that could be solved without the level of skill described by Dr. Cimini:

A POSITA in 2004 was typically involved in deploying and configuring wireless communication equipment to increase the reach of commercial wireless networks, increase their capacity to handle more users, and also allow for the deployment of new applications requiring more bandwidth. A POSITA would not have been required to design a wireless system from the ground up. This is because many important parameters and design choices had already been made by standards setting committees in order to ensure interoperability of equipment. Thus, a POSITA would have had enough knowledge of the technology to understand and deploy equipment adhering to these technical specifications but would have a very limited ability to change the fundamental specifications of the network.

Id., ¶22. While wireless communications is itself a very sophisticated field, a POSITA at the time of invention did not need a deep understanding of every aspect of the wireless networks. *See id.*

Dr. Cimini asserts that, in determining the level of ordinary skill in the art, he considered the level of education/experience of those working in the field, the types of problems encountered in the field, and the sophistication of the technology. Ex. 1003 [Cimini-Decl.] ¶29. However, he provides no evidence or reasoning to support his conclusion. *See id.*, ¶40. His statements are thus unsupported and should be given little weight. *See Xerox v. Bytemark*, IPR2022-00624, Paper 9, 15 (Aug. 24, 2022) (precedential); *Dionne v. Liotta*, Int. 104,333, Paper 119, 5 (Oct. 31, 2001) (*per curiam*) (informative) (rejecting “the conclusory statements of [a party’s] experts” as “evidence in support of its alleged skill level”); *Ex parte Jud*, No. 2006-1061, 5-6 (Jan. 30, 2007) (expanded 7-judge panel) (informative) (“A statement about education level and work experience could be relevant [to level of ordinary skill] but only to the extent that it supports more direct evidence of what one of skill would have known (and known how to do).”).

Dr. Cimini has not provided the type of evidence-based analysis and reasoning that Mr. Alberth has regarding the level of ordinary skill in the art. Thus, Dr. Cimini’s conclusion that a POSITA would have up to five years of work experience in addition to a doctorate education should be rejected in favor of Mr. Alberth’s reasoned position based on “what the hypothetical person with such skill would have known (and known how to do).” *Jud*, 3.

2. Kaiser-Gibson And Frank Cannot Be Combined Without Extensive Modification Beyond The Skills Of A POSITA.

The Petition asserts that a “POSA would have had a reasonable expectation of success in making this combination” for three supposed reasons. Pet., 24. First, the Petition argues, combinations of multiple access techniques such as FDMA, TDMA, and CDMA were well-known. *Id.* Second, Frank and Kaiser both used spreading codes. *Id.*, 25. And third, Frank allegedly improved a CDMA system and “a POSA would [have] recognize[d] that Frank’s techniques would improve similar systems, such as Kaiser’s [], in the same ways.” *Id.* As discussed above, however, a POSITA would not have been motivated to add Frank’s features to Kaiser-Gibson because doing so would have resulted in no improvement in performance and indeed would have reduced the system’s capacity to initiate connections to multiple mobile stations. *See* Section III.A *supra*. But, just as importantly, the Petitioner’s references cannot be simply put together as proposed like a set of LEGO® or other building blocks. The specifications of Kaiser-Gibson and Frank are dramatically different, such that a combination of the references at the very least without further, unspecified modifications, would be non-functional. The Petition does not explain how the proposed combination could be made to work.

Mr. Alberth explains:

The Kaiser-Gibson-Frank combination would be much more complicated to implement than simply “the combination of well-known prior art elements ... according to their established functions, yielding predictable results” as asserted by Dr. Cimini. Ex. 1003 [Cimini-Decl.] ¶88. This is clear just by comparing the specifications of Kaiser with Frank. Kaiser’s OFDM symbols are 128 μ s long. Ex. 1007 [Kaiser] 103. This is approximately 500x the duration of Frank’s CDMA chips. Ex. 1009 [Frank] 10:3-4 (calculating from the inverse of a 4.096 Mchips/s symbol rate). This also means that Kaiser’s symbol rate is slower than Frank’s by nearly three orders of magnitude. The bandwidth of a carrier is proportional to the chips/symbol rate. Thus, Frank’s carrier bandwidth is 500x wider than Kaiser’s subcarrier bandwidth. Even taking Kaiser’s 256 subcarriers together forming a 2 MHz transmission bandwidth, Frank’s single 5MHz carrier is 2.5x wider than Kaiser’s. Furthermore, even the hardware requirements for Kaiser and Frank are different. Whereas Frank uses rake receivers, Kaiser uses a MLSE. *Compare* Ex. 1007 [Kaiser] 101 *with* Ex. 1009 [Frank] 6:29-32.

Furthermore, the length of Frank’s random access signal along with its frame structure, which is composed of multiple timeslots, is incompatible with Kaiser. Each of Kaiser’s frames has 31 128 μ s long symbols, which means they have a duration of only 0.3968ms. *See* Ex. 1007 [Kaiser] 103. By contrast, Frank’s preamble alone is 1ms long. Thus, Frank’s random access signal, which include the preamble, 0.25ms guard time and data would be much longer than

Kaiser's frame. *See* Ex. 1009 [Frank] 10:3-4. This not only severely limits the number of mobile stations that can connect to the system but also makes it impossible to divide the frame into multiple access slots as suggested by Frank. *See id.*, 9:5-24. Moreover, such a long preamble would conflict with Kaiser's teaching that requires each frame start with a null symbol with no energy. Ex. 1007 [Kaiser] 102 ("Each OFDM-frame may start with a null symbol (without signal energy)"). This "null symbol can be used to enable each user a self-synchronization." *Id.* Since Frank's preamble extends beyond the length of a frame in Kaiser it would step on the null symbol and interfere with the operation of the system proposed by Kaiser. Given the differences in their specifications, combining Kaiser-Gibson with Frank is not, as Dr. Cimini suggests, simply a matter of taking one element in Frank and adding it to Kaiser-Gibson. Rather, it would require a complete bottoms-up redesign or an entirely new system.

Ex. 2001 [Alberth-Decl.] ¶48-49. While obviousness does not require that references be compatible without **any** modification, Petitioner has the burden to show that the modifications were obvious and within the capability of the POSITA. Petitioner and Dr. Cimini have failed to even address the dramatically different specifications of Kaiser and Frank, let alone explain which reference's specification would be adopted and why.

Furthermore, at a purely conceptual level, no evidence suggests that adding Frank's data and guard interval to Kaiser-Gibson would be within the skills of a POSITA. As Mr. Alberth explains:

Designing the correct parameters for a RACH requires extensive simulation in multiple environments. For example, Kaiser simulates its performance in four different scenarios. Ex. 1007 [Kaiser] 103. A POSITA would not be able to perform such simulations. Furthermore, large teams at standards setting organizations spend years working on such specifications. In order to properly design the proposed combination, a POSITA would have to allocate a certain number of subcarriers to dedicate to the RACH, determine whether the subcarriers are to be spread over the entire spectrum or grouped in a certain portion of the spectrum. Then the POSITA would need to determine the type and length of the random access signal, the duration of the guard interval, as well as what data to put on the RACH. The POSITA would also have to redesign the hardware on both the mobile station and the base station to support the new functions. Simply put, this would require a team of POSITAs with powerful simulation software a significant time to create the proposed combination of Kaiser-Gibson and Frank.

Ex. 2001 [Alberth-Decl.] ¶50. Combining complex systems like Kaiser-Gibson and Frank is thus not remotely simple, as Petitioner and its declarant suggest. *See id.* This is especially so because, as discussed below, the combination must meet very specific timing requirements dictated by the claims. *See* Section IV.A *infra*.

The Petition has not shown that a POSITA would have the requisite skill to combine Frank with Kaiser-Gibson, yet relies exclusively on Frank for limitations include the alleged “*random access signal followed by a guard period.*”

For this additional reason, no rationale for the combinations are shown, and the grounds cannot support institution.

IV. THE PETITION’S COMBINATION DOES NOT DISCLOSE OR RENDER OBVIOUS ALL THE LIMITATIONS OF THE CLAIM (ALL GROUNDS, ALL CLAIMS).

A. Petitioner’s Combination Fails To Disclose Or Render Obvious That The “Time Duration Of A Combination Of The Random Access Signal And Guard Period Is Greater Than The Time Duration Of At Least One Of The Plurality Of OFDM Symbols” (All Claims, All Grounds).

All the claims recite that the “*time duration of a combination of the random access signal and the guard period is greater than a time duration of at least one of the plurality of OFDM symbols.*” Ex. 1001 [’908 patent] cls. 1, 11, 21.

Petitioner first attempts to meet this limitation by comparing the random access signal and guard period from the unmodified Frank to the OFDM symbol duration of the unmodified Kaiser, but fails. The Petition asserts:

Frank discloses an example “where a preamble is 16 symbols” or “1 ms long,” and the “guard time interval, T_G , ... could be 0.25 ms long.” EX1009, 10:1-5. Kaiser discloses an example where the duration of an OFDM symbol is “128 μ s.” EX1007, 0004. The combined duration of

Frank's preamble and guard period ($1\text{ms} + 0.25\text{ms} = 1.25\text{ms}$) is greater than the duration of at least one OFDM symbol ($128\mu\text{s}$)."

Pet., 37. As explained in detail above, this proposed simple combination of unmodified Kaiser-Gibson with unmodified Frank would be inoperable. *See* Section III.B.2 *supra*; *see also* Ex. 2001 [Alberth-Decl.] ¶49 ("Given the differences in their specifications, combining Kaiser-Gibson with Frank is not, as Dr. Cimini suggests, simply a matter of taking one element in Frank and adding it to Kaiser-Gibson. Rather, it would require a complete bottoms-up redesign or an entirely new system."). The Petition's comparison of the *unmodified* preamble and guard interval from Frank with the *unmodified* symbol length of Kaiser, quoted above, is for an *inoperable system* and thus completely irrelevant.

It is impossible to discern with any certainty how these durations in the *modified* combination of Frank would work. As Mr. Alberth warns:

"Comparing Frank's CDMA preamble and guard interval with Kaiser's OFDM symbol length is like proposing to combine a F1 racecar with a semi-truck and saying that the combination's quarter mile time would be less than the time it takes to stop the car from 60mph by comparing the quarter mile time of the *unmodified* racecar and the stopping time of the *unmodified* semi-truck. The comparison is simply nonsensical."

Ex. 2001 [Alberth-Decl.] ¶51. The comparison required by the claims, that the "*time duration of a combination of the random access signal and the guard period*

is greater than a time duration of at least one of the plurality of OFDM symbols”

makes sense when both time intervals are from a functioning combination of all the references, but not otherwise.

As Mr. Alberth explained and as further described in Section III.B.2 above, for the combination of Kaiser-Gibson with Frank to actually function, it would need “a complete bottoms-up redesign.” Ex. 2001 [Alberth-Decl.] ¶49. In this new system, there is no predicting how the “*duration of a combination of the random access signal and the guard period*” would compare to the “*time duration of at least one of the plurality of OFDM symbols.*” As Mr. Alberth explains:

Assuming a team of engineers would be motivated to design, test, and simulate a combination of Kaiser-Gibson with Frank, they would need to make countless design choices that would affect the duration of the random access signal, the duration of the guard period, and the duration of the OFDM symbols. It can certainly be hypothesized that such a design could result in “*duration of a combination of the random access signal and the guard period [being] greater than a time duration of at least one of the plurality of OFDM symbols*” as required by the claims. However, it is also possible that the combination could be designed with very long OFDM symbols such that the claim limitations would not be met. There is simply nothing in any of these references to suggest that the combination should or should not necessarily practice the claim limitation.

Id., ¶52. Even if a POSITA would be motivated enough and skilled enough to make the Gibson-Kaiser-Frank combination, there is nothing to suggest that the resulting system would have met all the '908 patent's claim limitations.

The Petition suggests, in the alternative, that a POSITA would have designed the Kaiser-Gibson-Frank combination such that “*duration of a combination of the random access signal and the guard period is greater than the time duration of at least one of the plurality of OFDM symbols*” based on Frank's teachings about frame slots:

As an additional, independent reason, Frank also discloses that because the duration of the preamble is typically “less than the length ... of N frame slots in existing systems,” the guard interval can extend “from the end of the preamble to the beginning of the next frame slot.” EX1009, 9:11-16. A POSA would have understood that even if the duration of Frank's preamble and guard period was only one slot in the Kaiser-Gibson system (having 31 symbols, or alternatively, at least 7 symbols), it would be “*greater than a time duration of at least one of the plurality of OFDM symbols*.” EX1003, ¶112; see Section VII.E.3 (explaining for Limitation 1.2 that Kaiser teaches 31 (or, alternatively, at least seven) OFDM symbols per slot).

Pet., 37-38. However, the combination's frame format is based on Kaiser's teachings, not Frank's. Pet., 31 (“Kaiser teaches or suggests that ‘*the first uplink signal ... utilizes a frame format comprising a plurality of timeslots, each timeslot*

comprising a plurality of OFDM symbols.”). As discussed below, Kaiser **does not** in fact teach or suggest “*a frame format comprising a plurality of timeslot*” and it would not be obvious to add such to the claimed “timeslots.” *See* Section IV.B *infra*. Since the combination relies on Kaiser, and Kaiser does not have timeslots, Frank’s teachings about the duration of Frank’s “guard interval” relative to its “frame slot” does not teach or suggest anything about the durations of the claimed “time slots,” “random access signals,” “guard periods” or “OFDM symbols” in the proposed Kaiser-Gibson-Frank combination.

Thus, Petitioner has failed to prove that in its combination the “*duration of a combination of the random access signal and the guard period is greater than the time duration of at least one of the plurality of OFDM symbols*” and thus the Petition should be denied.

B. Petitioner’s Combination Fails To Disclose Or Render Obvious “A Frame Format Comprising A Plurality Of Timeslots, Each Timeslot Comprising A Plurality Of OFDM Symbols” (All Claims, All Grounds).

All the claims require “*a frame format comprising a plurality of timeslots, each timeslot comprising a plurality of OFDM symbols.*” Ex. 1001 [’908 patent] cls. 1, 11, 21. Read in light of the specification, the claims thus require an intermediate unit of time, called the “*timeslot*” between the larger “*frame*” and the

smaller “*OFDM symbols*.” *See* Section IV.B.1 *infra*. The Petition fails to show a reasonable likelihood that this limitation is met.

The Petition relies only on Kaiser for this limitation and provides two alternative arguments. Pet., 32. Neither is convincing. *See* Section IV.B.2 *infra*. First it argues that the 31 symbol long unit of time that Kaiser repeatedly calls a “frame” is not the claimed “*frame format*” but rather is the claimed “*timeslot*.” Pet., 32. Under this read, four of Kaiser’s “frames,” make up the claimed “*frame*,” exactly contrary to Frank’s own teachings about what a “frame” is. *Id.* Perhaps anticipating strong skepticism of this irrational choice to ignore Frank’s own labels for its time units, Petitioner offers an alternative read “to the extent the term ‘*frame format*’ is interpreted as limited to a single OFDM frame.” *Id.*, 33. Under this alternative read, the Petition uses the teachings of the ’908 patent against itself, as a basis to arbitrarily divide Kaiser’s OFDM frame, which consists of 31 symbols, into 4 “*timeslots*” of at least seven “*OFDM symbols*.” *Id.* Contrary to these arguments, however, neither Kaiser nor any of the other cited art teaches an intermediate time unit that meets the claimed “*timeslot*” between the claimed “*frame*” and “*OFDM symbol*.”

Indeed, given Kaiser’s unique design, it would not even be obvious to add such an intermediate time unit like the claimed “*time slot*.” *See* Section IV.B.3 *infra*.

1. The Claimed “*Frame Format*” Must Have A Unit Of Time Called The “*Timeslot*” With A Duration Between A “*Frame*” And An “*OFDM Symbol*.”

In the '908 patent, the inventors disclose that the claimed invention's “*frame format*” has a unit of time called the “*timeslot*,” with a duration between a “*frame*” and an “*OFDM symbol*.” This is shown clearly in Figures 3 and 5 of the Patent:

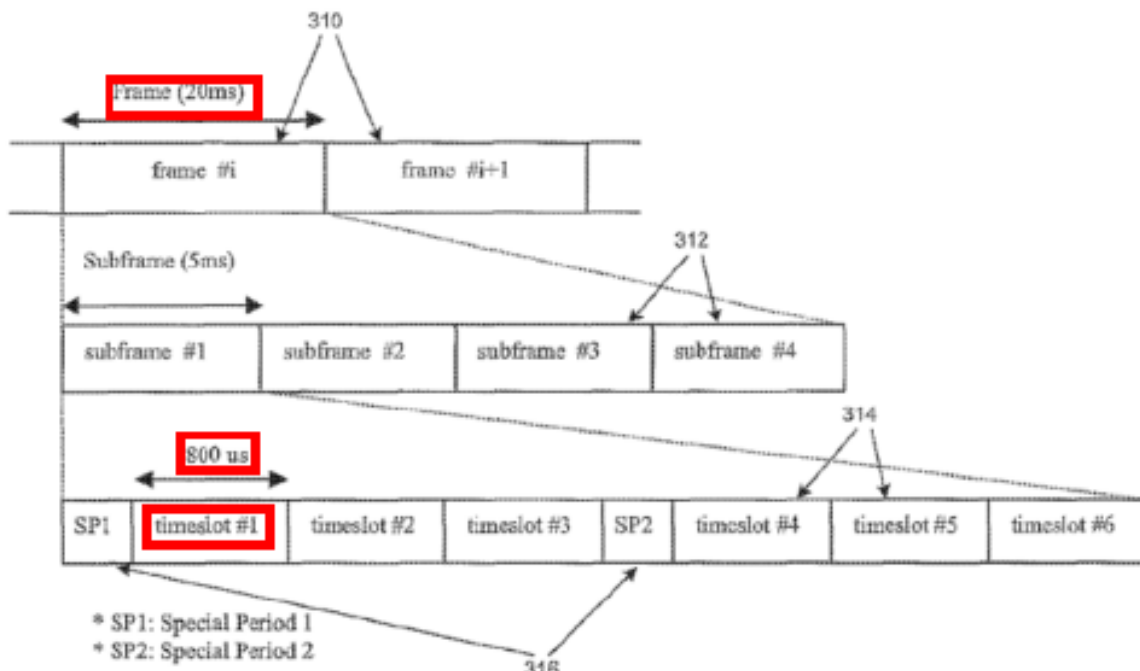


FIG. 3

Ex. 1001 ['908 patent] Fig. 3 (annotated). “FIG. 3 illustrates a frame structure of a suitable OFDM system. In this system, a 20ms frame 310 is divided into four 5ms subframes 312. One subframe 312 consists of six time slots 314 and two special periods 316, which serve transition time from downlink to uplink and vice versa.” *Id.*, 4:8-13.

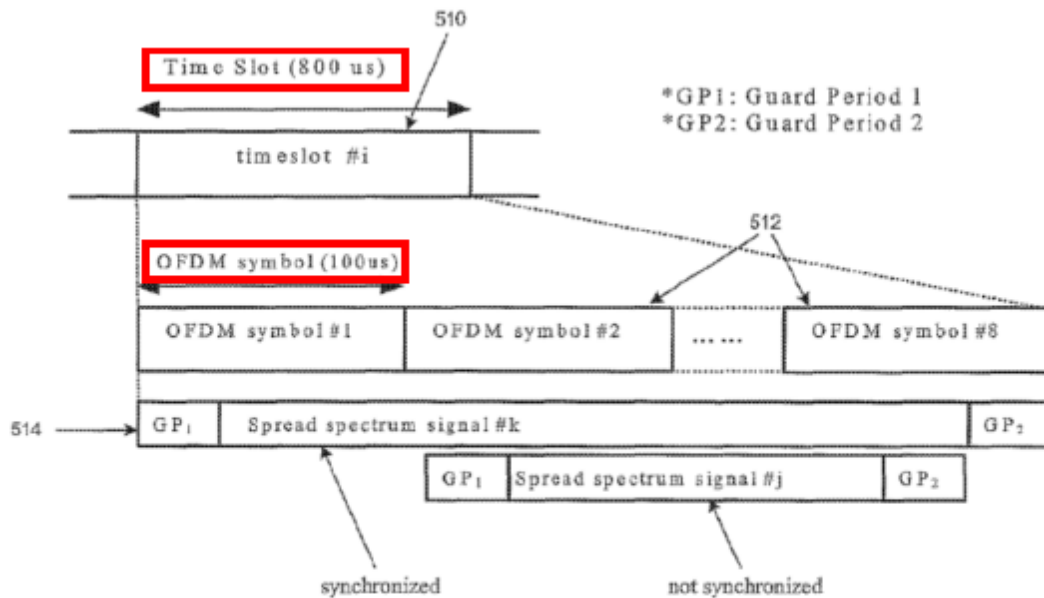


FIG. 5

Id., Fig. 5 (annotated). “FIG. 5 illustrates a slot structure of an OFDM system and an overlay system. One 800 μ s time slot 510 is comprised of 8 OFDM symbols 512.” *Id.*, 4:19-22. Thus, the ’908 patent is very clear that in its “*frame format*,” the frame is the longest unit of time, followed by a “*time slot*” and finally the smallest unit of time, which is the “*OFDM symbol*.”

These units of time starting from a “*frame*” and moving to a smaller “*timeslot*” and then the smallest discrete unit of time called the “*OFDM symbol*.” Mr. Alberth explains that this terminology is used by the ’908 Patent to describe the time domain:

The ’908 patent specification describes a “*frame format*” where a “*timeslot*” is an intermediate unit of time between the larger “*frame*” and the smaller unit of time called a “*OFDM symbol*.” Ex. 1001 [’908

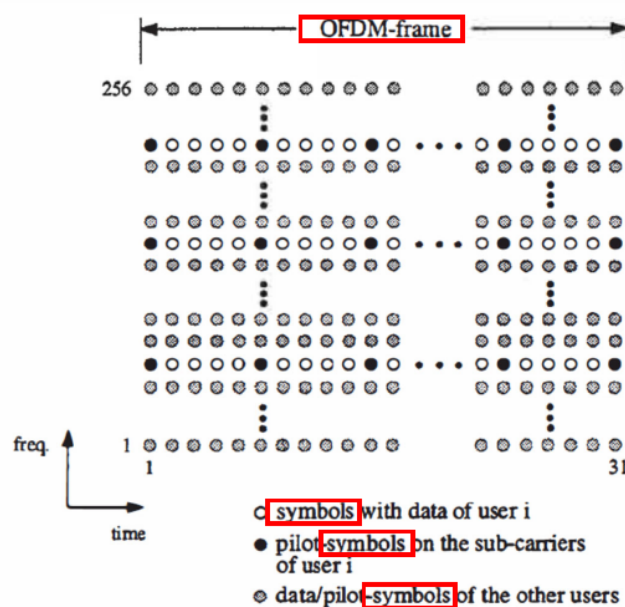
patent] 4:8-10, 4:20-22, Figs. 3, 5. Dr. Cimini states that “the ’908 patent’s specification does not use or define the term ‘*frame format*.’” Ex. 1003 [Cimini-Decl.] ¶101. It is true that the specification uses the terms “frame structure” and “slot structure” rather than “*frame format*.” See Ex. 1001 [’908 patent] 4:8-10, 4:20-22. However, a POSITA would certainly interpret the claimed “*frame format*” in light of the specification’s description of the “frame structure” and “slot structure,” as well as Figures 3 and 5. Those sections focus on the structure or “*frame format*” **within** a single frame. Conversely, I cannot find a discussion anywhere in the ’908 specification of a format that encompasses multiple frames. Based at least on the sections of the ’908 specification I cite above, a POSITA would understand that the claimed “*frame format*” describes the internal structure of a single frame. It does not appear that Dr. Cimini considered these sections as he did not cite them when explaining his understanding of “*frame format*.” See Ex. 1003 [Cimini-Decl.] ¶101. Thus, the claimed “*frame format*” requires two units of time larger than the “*OFDM symbol*,” with the claimed “*timeslot*” being smaller than the claimed “*frame*.”

Ex. 2001 [Alberth-Decl.] ¶34. It is thus clear from the patent’s claims and specification that the claims require three different units of time of decreasing length, starting from the “*frame*,” then moving onto the smaller “*timeslot*” before descending to smallest discrete unit of time, the “*OFDM symbol*.” See *id*.

2. Kaiser Does Not Disclose That Its “Frames” Have The Claimed “*Plurality Of Timeslots, Each Timeslot Comprising A Plurality Of OFDM Symbols.*”

Kaiser, the sole reference it relies on for its combination’s frame structure, does not disclose “*a frame format comprising a plurality of timeslots, each timeslot comprising a plurality of OFDM symbols.*”

Kaiser never uses the words slot or timeslot. *See generally* Ex. 1007 [Kaiser]. Instead, Kaiser states that “[t]he data transmission can be based on OFDM-frames, where *each frame consists of a group of several OFDM symbols.*” *Id.*, 102. There is no suggestion that this frame is divided into any unit other than “31 OFDM symbols.” *Id.*, 103 (“each frame consists of 31 OFDM-symbols, see Fig. 4”), (“Figure 4: OFDM frame with 256 sub-carriers and 31 OFDM-symbols.”). This can also be seen visually in Kaiser’s Figure 4:

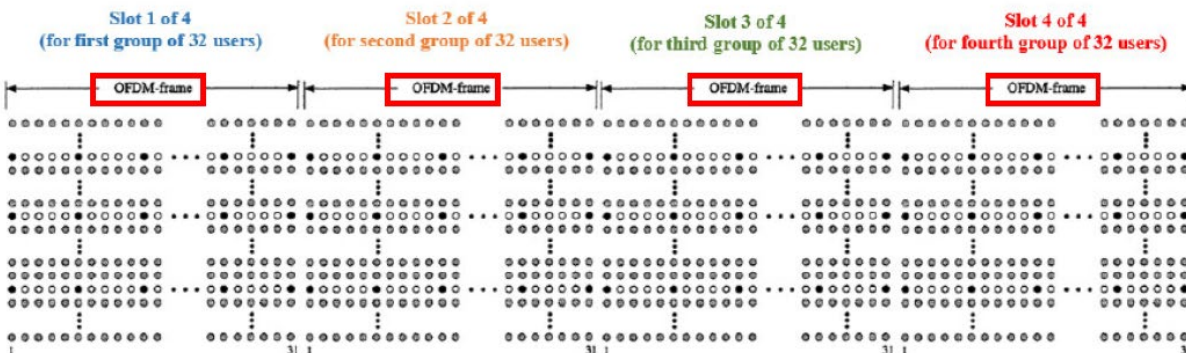


Id., 103 (Kaiser Figure 4 annotated). Thus, as Mr. Alberth concludes, “There is no explicit teaching in Kaiser that the ‘frame’ it describes is divided into ‘*timeslots*’ as required by the claims.” Ex. 2001 [Alberth-Decl.] ¶41.

The Petition’s first argument that this limitation is met is that a POSITA at the time of the invention would interpret Kaiser’s use of the word “frame” to not actually refer to the claimed “*frame*,” but rather to the alleged “*timeslot*.” Pet., 31-32 (“the duration of each OFDM frame being a timeslot supporting 32 active users, resulting in four timeslots”). However, Kaiser clearly states multiple times that a unit of 31 OFDM symbols is called an “OFDM frame.” Ex. 1007 [Kaiser] 102 (“each frame consists of 31 OFDM-symbols,” “OFDM frame with 256 sub-carriers and 31 OFDM-symbols.”). Yet the Petition inexplicably alleges that this 31-OFDM symbol unit called a “frame” should not be read as the “*frame*” in the “*frame format*,” but rather should be read as the “*timeslot*.” Pet., 32 (“Kaiser thus teaches that ‘*each timeslot*’ (the duration of an OFDM frame) comprises ‘*a plurality of OFDM symbols*’ (e.g., 31 OFDM symbols).”). Neither the Petition nor its supporting declaration explain why a POSITA would ignore Kaiser’s own words and interpret Kaiser to not mean what it says, and decide that the unit Kaiser calls a “frame” is not a “*frame*” as claimed. *See id.*, 31-32; *see also* Ex. 1003 [Cimini-Decl.] ¶¶ 98-101.

In fact, the Petition’s position is untenable. The ’908 patent’s specification and claims make clear that the claimed “*frame format*” must include a unit of time called a “*frame*” made up of “*timeslots*.” See Ex. 1001 [’908 patent] 4:8-13. The Petition’s redefinition of Kaiser’s “*frame*” to be a “*timeslot*” means that it cannot identify any unit of time called a “*frame*” in its “*frame format*.” See *id.*

Petitioner’s arguments attempt to obscure this issue by focusing on the term “*frame format*,” without even attempting to identify the claimed “*frame*” itself. Pet., 31 (asserting that Kaiser “‘*utilizes a frame format*’ (a cycle of four OFDM frames)”). Even in its illustration of the alleged “*frame format*,” however, Petitioner never intelligibly identifies what unit of time would constitute the “*frame*.”



Id., 32 (annotated). The logical implication of the Petition’s read is that, in light of the ’908 patent’s specification, the “*frame*” would have to be the next unit of time larger than the alleged “*timeslot*” – the “cycle of four OFDM frames.” Explicitly asserting that a “cycle of four OFDM frames” is a single claimed “*frame*,”

however, is a step too far even for the Petition. For it would be absurd to assert that the claimed “*frame*” of the “*frame format*” is not actually the unit of time labeled by Kaiser as “OFDM frame” but rather a “cycle of OFDM frames.” To prevail Petitioner must at least provide some reason for a POSITA to ignore Kaiser’s own explicit language. It has provided none.

Likely knowing the implausibility of an interpretation of “*frame format*” that changes the meaning of Kaiser’s own words and fails to identify a “*frame*,” the Petition proposes an alternative position, which also fails:

The ’908 patent describes a “slot structure of an OFDM system” where each timeslot “is comprised of 8 OFDM symbols.” EX1001, 4:19-23; *compare* EX1001, 4:32-33 (example “OFDM symbol duration” of “100 us”), with EX1007, 0004 (“OFDM-symbol duration is $T_s = 128\mu s$ ”). Kaiser discloses that “each [OFDM] frame consists of 31 OFDM-symbols.” EX1007, 0004. Accordingly, applying the ’908 patent’s example of 8 OFDM symbols/timeslot, each of Kaiser’s OFDM frames includes a plurality of timeslots (four), each of which includes a plurality of OFDM symbols (at least seven). EX1003, ¶102.

Pet., 33. The logic of this argument is not apparent. It appears to be asserting that, because the duration of Kaiser’s symbols is comparable to the duration of the ’908 patent’s symbols, it would be obvious to divide Kaiser’s 31 OFDM symbol long “OFDM frame” into timeslots with each timeslot, like in the ’908 patent, having 8 OFDM symbols.

This argument is logically and legally untenable. To begin with, there is no apparent reason why, because Kaiser has a symbol length within 25% of the '908 patent, it would be obvious to import the '908 patent's timeslots. *See* Ex. 2001 [Alberth-Decl.] ¶41 (“The fact that the duration of the symbols in Kaiser is in the same order of magnitude as that in the '908 patent does not mean that Kaiser teaches or suggest the claimed ‘*timeslots*.’ It is perfectly possible to have OFDM symbols in the 100µs range without using the claimed ‘*timeslots*.’”).

Furthermore, by “applying the '908 patent's” disclosures (Pet., 33) to argue that it would be obvious to make these *timeslots*, Petitioner and its declarant are using the disclosures within the '908 Patent against itself, which is prohibited hindsight. *In re Lee*, 277 F.3d at 1344 (“It is improper,” in arguing obviousness, to ““use that which the inventor taught against its teacher.””) (alteration marks omitted, quoting *W.L. Gore v. Garlock, Inc.*, 721 F.2d 1540, 1553 (Fed. Cir. 1983)); *Otsuka Pharm. Co. v. Sandoz, Inc.*, 678 F.3d 1280, 1296 (Fed. Cir. 2012) (“The inventor's own path itself never leads to a conclusion of obviousness; that is hindsight.”); *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999) (“tak[ing] the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability” in this manner is “the essence of hindsight.”). Thus, this argument as to the “*frame format*” is just as flawed as its first. Petitioner has not shown that its combination of Kaiser-Gibson-Frank would have “*a frame format comprising a*

plurality of timeslots, each timeslot comprising a plurality of OFDM symbols.”

The grounds therefore cannot support institution.

3. It Would Not Have Been Obvious For Kaiser To Introduce An Intermediate Time Unit Like The Claimed “*Timeslot*.”

The Petition does not explicitly argue that it would be obvious or inherent to modify Kaiser to add an intermediate time unit of arbitrary length between the claimed “*frame*” and the claimed “*OFDM symbols*.” See Pet., 31-33. It would not be obvious to do so.

The standards that must be met to find either inherency or single-reference obviousness are high. Inherency requires that a missing element be “‘necessarily present,’ not merely probably or possibly present, in the prior art.” *Trintec Indus., Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 1295 (Fed. Cir. 2002) (quoting *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999)); *PAR Pharm. v. TWi Pharms., Inc.*, 773 F.3d 1186, 1195 (Fed. Cir. 2014). The Federal Circuit has also put in place a rigorous framework for obviousness inquiries of such a “missing limitation.” As noted in *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361-63 (Fed. Cir. 2016), reliance upon “common sense” to find a missing limitation is the “exception, rather than the rule” and is only suitable where “the limitation in question was unusually simple and the technology particularly straightforward.” Here, the Petitioner has

not shown that the claimed “*timeslot*” is either necessarily present in Kaiser or unusually simple, as explained below.

What is the claimed “timeslot”? The ’908 patent discloses that the “basic structure of an MC signal in the time domain is made up of time slots to support ***multiple access***.” Ex. 1001 [’908 patent] 4:1-2. As Mr. Alberth explains:

Timeslots can be added to a frame structure as an intermediate unit of time between the larger frame and the smaller OFDM symbol in order to facilitate multiple access. When a single frame is shared among multiple users, groups of OFDM symbols within the frame need to be assigned to each user. One way to do this, while reducing overhead, is to divide the frame into timeslots that are smaller than the frame but longer than a single OFDM symbol. Using timeslots in this way can reduce overhead.

Ex. 2001 [Alberth-Decl.] ¶42. Including the claimed “*timeslots*” in the “*frame format*” between the “*frame*” and the “*OFDM symbols*” enables the ’908 patent’s invention to efficiently divide up each frame between multiple users. *See id.*

Kaiser, unlike the embodiment described in the ’908, does not divide its frames between multiple users. Unlike competing technologies like MC-CDMA, the SSMC-MA system described in Kaiser supports multiple users by assigning each user dedicated subchannels on which ***all*** the frames belong to that single user.

Ex. 1007 [Kaiser] 100 (“In contrast to MC-CDMA, the SSMC-MA separates the

users' signals according to an FDMA scheme on sub-carrier level. Thus, the novel scheme avoids multiple access interference (MAI) within a cell.”), *id.* (“The data of each active user are mapped to a set of sub-carriers, which is exclusively assigned to this user.”). Since the benefit of adding the intermediate time unit called a “*timeslot*” is to allow efficient sharing of sharing the claimed “*frames*” between multiple users and Kaiser does not share “*frames*” between users, it would not be obvious to modify the Kaiser-Gibson-Frank combination to have “*a frame format comprising a plurality of timeslots, each timeslot comprising a plurality of OFDM symbols.*”

Therefore, the ground cannot support institution.

V. THE FAILURE OF THE PRIOR OBVIOUSNESS CHALLENGE WEIGHS AGAINST GRANTING THIS FOLLOW-ON CHALLENGE.

As discussed above, this is not the first IPR that challenges these claims. The failure of the earlier challenge weighs against finding obviousness in this case. This is true regardless whether the rejection of the prior challenge is considered as the first of improper serial petitions, or as an objective indicator of nonobviousness.

As already discussed above, in IPR2022-00277, the Board panel denied institution on Dell's petition for *inter partes* review of the '908 patent. -00277 DDI. Petitioner, alleging obviousness based on different references, argues that its

references, arguments, and expert are “different” from those in IPR2022-00277, based on “review and consideration of the record in IPR2022-0277,” and argues that “the deficiencies in Dell’s prior-art combinations that led the Board to deny Dell’s petition are not present here.” Pet., 76. Thus, while Petitioner protests that its alleged improvements on the Dell petition are “no different than review of the ’908 patent’s file history” and merely “routine diligence to understand the patent’s history before the Office,” they are clear evidence that Petitioner used the earlier Dell petition to shape its arguments in this Petition. *See id.*; *see also* Ex. 1003 [Cimini-Decl.] ¶¶38-39 (Petitioner’s declarant arguing that the Grounds here do not suffer from the same infirmities as those in IPR2022-0277).

The Kaiser-Gibson-Frank combination proposed in this Petition seems, nevertheless, to take the same approach as the Ma-TR Grounds in IPR2022-0277. Both combinations start with primary reference (either Ma or Kaiser) that combines aspects of both OFDM and spreading but are silent as to the claimed “guard period.” *See e.g.*, Ex. 2010 [Ma] ¶148 (explaining that its Mode-1 signals “include one or more orthogonal spreading codes” and “can be termed ‘Multi-Code (MC)-OFDMA’”); Ex. 1007 [Kaiser] 100 (explaining that its “multiple access scheme is based on a combination of the spread-spectrum technique and orthogonal multi-carrier modulation”). Both petitions then argue that it would be obvious to combine a separate reference teaching the alleged “*random access*

*signal followed by a guard period.” Compare IPR2022-00277 Petition, 21-23 (“TR discloses the *random access signal followed by a guard period.*”) with Pet., 36 (“Frank teaches or suggests ... ‘*a random access signal followed by a guard period.*”). Just as the Board previously rejected the combination of Ma and TR, the combination of Kaiser-Gibson and Frank should also be rejected. See Section III *supra*. The Office has long disfavored such “road-mapping,” for the reasons already explained twice in the pending -01537 and -01567 cases above.*

Indeed, even aside from the hindsight “road-mapping” on which the Petition is based, this petition is even less persuasive, for obviousness purposes, than the alleged prior art raised in IPR2022-00277. For example, this petition relies on a combination of three references whereas the prior petition only relied on only one or two. *Compare* Pet., 19 *with* -IPR2022-00277 Petition, 10 (“Ground-A1: Ma-TR renders obvious the Challenged Claims”), 59 (“Ground-B1: Walton anticipates or renders obvious the Challenged Claims”). Unlike in the IPR2022-00277 Petition, this petitioner had to import a separate reference (Gibson) because its base reference (Kaiser) does not even mention random access signals. *See* Pet., 20. Additionally, there was no dispute for either IPR2022-00277 ground that the references disclosed “*time duration of a combination of the random access signal and the guard period is greater than a time duration of at least one of the plurality of OFDM symbols.*” *See* IPR2022-00277 Petition, 25, 70. Here, as already

explained above, the Kaiser-Gibson-Frank combination does not disclose or render obvious this limitation. *See* Section IV.A *supra*.

VI. CONCLUSION

Any of the bases in Sections III-V provides an independent reason to deny the Petition, and Patent Owner respectfully requests the same.

Respectfully submitted,

 / Kenneth Weatherwax /

Kenneth J. Weatherwax, Reg. No. 54,528

LOWENSTEIN & WEATHERWAX LLP

Date: July 13, 2023

CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITS

This Patent Owner Preliminary Response (the “POPR”) consists of 13,886 words, excluding table of contents, table of authorities, certificate of service, this certificate, or table of exhibits. The POPR complies with the type-volume limitation of 14,000 words as mandated in 37 C.F.R. § 42.24. In preparing this certificate, counsel has relied on the word count of the word-processing system used to prepare the paper (Microsoft Word).

Respectfully submitted,

/ Abigael Neufeld /

Date: July 13, 2023

CERTIFICATE OF SERVICE

The undersigned hereby certifies that the following documents were served
by electronic service, by agreement between the parties, on the date below:

PATENT OWNER'S PRELIMINARY RESPONSE

EXHIBITS 2001-2012

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/ Abigael Neufeld /

Date: July 13, 2023