

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MEDIATEK INC. and
MEDIATEK USA, INC.,

Petitioners,

v.

NIPPON TELEGRAPH AND TELEPHONE CORPORATION,
Patent Owner.

Case IPR2020-01404
Patent 7,280,551

**PATENT OWNER'S PRELIMINARY RESPONSE TO
PETITION FOR INTER PARTES REVIEW
UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.1 et seq.**

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<i>MV3 Partners, LLC v. Roku,</i> (6:2018-cv-00308 (WDTX))	50

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Exhibit No.	Description
2001	Amended Scheduling Order, C.A. No. 1:20-cv- 00583-ADA, -00632-ADA, -00769-ADA (WDTX), Dkt. No. 36 (“Amended Scheduling Order”)
2002	Complaint, C.A. No. 1:20-cv-00632-ADA (WDTX) Dkt. No. 1
2003	Ninth Supplemental Order Regarding Court Operations Under the Exigent Circumstances Created By The COVID-19 Pandemic, Oct. 14, 2020
2004	“Texas Patent Judges Diverge on Covid-19 Trial Protocols,” Carstens & Cahoon, LLP (Summary of Law360 article), Oct. 19, 2020, available at https://cclaw.com/2020/10/19/texas-patent-judges-diverge-on-covid-19-trial-protocols/
2005	Declaration of James T. Geier (“Geier Decl.”)
2006	Kin K. Leung, Outdoor <i>IEEE 802.11 Cellular Networks: MAC Protocol Design and Performance</i> , 2002 IEEE International Conference on Communications New York, New York, USA, April 28-May 2, 2002 (“Leung 2002”)
2007	Univ. Rochester ECE, “Lecture 2 Media Access Control,” 2002 (“Rochester Lecture”)
2008	A. D. Myers and S. Basagni. Handbook of Wireless Networks and Mobile Computing, chapter 6: Wireless Media Access Control (“Myers”); Wiley Series on Parallel and Distributed Computing. John Wiley & Sons, Inc., New York, February 2002. I. Stojmenovic, ed. (“Myers 2002”)
2009	Cornell Univ. CS, “13: Link Layer, Multiple Access Protocols,” Apr. 9, 2003 (“Cornell Lecture”)
2010	John G. Proakis, Digital Communications (4th ed. 2001)
2011	Sky DSP “CDMA Results,” 1997-2001, available at http://www.skydsp.com/publications/4thyrthesis/chapter3.htm (“CDMA Results”)
2012	Northeastern Univ., “Medium Access Control (MAC), and Wireless LANs” 2000, at 18, available at https://www.ccs.neu.edu/home/rraj/Courses/6710/S10/Lectures/WirelessLANs.pdf (“Northeastern Lecture”)

Exhibit No.	Description
2013	Defendant’s Preliminary Proposed Constructions, C.A. No. 1:20-cv- 00583-ADA, -00632-ADA, -00769-ADA (WDTX), Nov. 3, 2020
2014	“CDMA-Quick Guide;” available at https://www.tutorialspoint.com/cdma/cdma_quick_guide.htm
2015	“CDMA Testing,” Nov. 1, 1996, available at https://www.evaluationengineering.com/home/article/13000580/what-is-cdma-and-how-is-it-tested
2016	Plaintiff’s Proposed Constructions, C.A. No. 1:20-cv- 00583-ADA, -00632-ADA, -00769-ADA (WDTX), Nov. 3, 2020
2017	Minute Order, July 22, 2020, <i>Continental Intermodal Group—Trucking LLC v. Sand Revolution LLC, et al</i> (7-18-cv-00147 (WDTX))
2018	Docket Navigator Time to Milestones Summary
2019	Summary of J. Albright Orders on Opposed Motions to Stay
2020	IAMS J. Albright Interview, available at https://www.iam-media.com/law-policy/albright-the-last-thing-anyone-should-think-about-venue-it-plaintiff-friendly
2021	Defendant’s Preliminary Invalidity Contentions, C.A. No. 1:20-cv- 00583-ADA, -00632-ADA, -00769-ADA (WDTX), Oct. 6, 2020
2022	Univ. North Carolina, Wireless and Mobile Communications, “Medium Access Control,” (“UNC Lecture”) at 5, available at https://www.cs.unc.edu/~jasleen/Courses/Fall17-635/slides/4A-MAC-layer.pdf .

I. INTRODUCTION

Nippon Telegraph and Telephone Co. (“NTT” or “Patent Owner”) respectfully requests that the Board decline to institute *inter partes* review of U.S. Patent No. 7,280,551 (“the ’551 Patent”). The purported grounds for unpatentability recited in Mediatek, Inc. and Mediatek USA’s (collectively, “MT” or “Petitioner”) Petition (Paper No. 2) plainly lack merit because they rely on misconstruing the claims.

Across the board, the Petitioner’s references, alone or in combination, fail to disclose the ’551 Patent’s recited “mandatory channel,” and thus fail to disclose the steps of “setting a mandatory channel” and “transmitting...only when the mandatory channel is idle.” The ’551 Patent makes clear that its invention pertains to a multi-channel architecture, wherein *one of multiple* available frequency channels is designated as “mandatory,” such that sensing of its idle state determines whether a transmission takes place on any channel. *See e.g.*, EX1001 (“the ’551 Patent”) at 3:50-60. Petitioner, however, appears to have missed these critical aspects of the ’551 Patent because its primary references generally disclose *single* frequency channel communications. Further, two of Petitioner’s references—U.S. Patent Appl. Pub. No. 2003/0220112 A1 (“Bugeja”)¹ and U.S.

¹ EX1007.

Patent No. 6,560,292 (“Lundby”)²—*teach against* aspects of the ’551 Patent, such as distinguishing between the multiple channels available or use of carrier sensing to detect a channel’s idle state. For at least these reasons, the Board should deny institution.

Moreover, in this case there is ample reason for the Board to deny institution on discretionary grounds. As Petitioner admits, the ’551 patent is concurrently asserted against it in the Western District of Texas. Per that court’s Scheduling Order, the court will have conducted a claim construction hearing before the Board’s decision on institution. EX2001. Further, the likelihood of a stay is low, as the presiding judge, Judge Alan D. Albright, has to date *never* granted an opposed motion to stay pending IPR, and the reasoning in his previous denials makes clear he will not grant one here, especially considering that IPR petitions have not been filed on all the patents-in-suit and the PTAB simply cannot resolve all of the issues in the pending district court case. *See e.g.*, EX2017; EX2019. Judge Albright also is keeping his docket on schedule and has been moving forward with jury trials as COVID cases have dropped in the Western District. *See e.g.*, EX2003; EX2004. Taken together with the lack of merit of this Petition, there

² EX1008.

is simply no need for the Board to waste valuable resources in a race against the co-pending proceedings.

NTT therefore respectfully requests that the Board deny institution.

II. TECHNOLOGY OF THE ‘551 PATENT – PETITIONER OMITTS KEY ASPECTS OF THE TECHNOLOGICAL BACKGROUND

In its overview of the ‘551 Patent, the Petitioner fails properly to contextualize the invention by omitting key aspects of the relevant technology, resulting in fundamental misunderstandings of the ‘551 Patent’s claims. NTT specifically identifies these gaps and misstatements below.

A. The ‘551 Patent Relates to Multi-channel Systems

Petitioner acknowledges that the ‘551 Patent teaches methods for multi-channel communication (*e.g.*, Paper No. 2, at 1), but fails to explain the relevance of such methods to the claimed inventions. As explained below, the ‘551 Patent is specifically addressed to multi-channel systems, and not single-channel systems.

The ‘551 Patent teaches that the 802.11-1999 standard discloses methods for sharing a *single* channel using CSMA. ‘551 Patent at 1:25-37 (citing 802.11-1999, “carrier sense...allows a plurality of stations (hereinafter STA) **to share one wireless channel** in a staggered manner.”) (emphasis added). By contrast, during the time frame relevant to this petition, non-standardized methods for transmitting a plurality of wireless packets to a given receiving station using multiple frequency

channels existed. *Id.* at 1:43-48; EX2005 (Declaration of James T. Geier, “Geier Decl.”) at ¶48. The latter are what the ’551 Patent refers to as transmission “using multiple wireless channels at the same time,” (or, hereinafter, “multi-channel” techniques). *Id.*; Geier Decl. at ¶48.

As understood by a person of ordinary skill in the art (“POSA”)³, “multi-channel” techniques allow a *single user* to access *multiple* frequency channels. Geier Decl. at ¶49. This is not the same as assigning a user a *single* channel from among multiple channels available in a particular frequency band, as is the case in 802.11-1999. *Id.* For example, as the Petitioner’s cited Bugeja reference acknowledges, there are generally three non-overlapping channels available for use in the 2.4 GHz band as provided by federal regulation. Bugeja at ¶4. An 802.11 user can use only one of these available channels, which has been assigned to it by an access point (AP). *Id.*, also Geier Decl. at ¶49. Thus, while an AP might have multiple users within its network at a given time, only *one channel* will be assigned to any given user at a time. Geier Decl. at ¶49. This is considered a *single* channel communication method within the terms of the ’551 Patent. *Id.*, citing ’551 Patent at 1:30-32. By contrast, Bugeja acknowledges that “multi-channel” communication techniques exist whereby a given “multi-channel client”

³ For the purposes of this Preliminary Response, Patent Owner will accept the Petitioner’s proposal for the level of ordinary skill.

has the capability to transmit and download on more than one channel, such that uplink and downlink speeds could be up to three times faster, thereby increasing throughput. *See* Bugeja at ¶46; Geier Decl. at ¶49.

The '551 Patent is directed to a scenario more akin to the “multi-channel” client referred to in Bugeja, in that it relates to communications systems wherein more than one channel is accessible to a given user. Geier Decl. at ¶50. For instance, the specification explicitly distinguishes the transmission of wireless packets using “multiple wireless channels” as being different from the single-channel transmission provided for in 802.11-1999. *See* '551 at 1:43-44 (“**On the other hand**, a wireless packet communication method is known in which, when **multiple wireless channels** are found idle by carrier sense...””) (emphases added). Further, the '551 Patent emphasizes that an advantage of its claimed methods is improving throughput between a *single* transmitting STA and receiving STA. Geier Decl. at ¶50. For example, the specification teaches that the problem of power leakage arises when “in case of transferring a wireless packet, ***a transmit-side STA*** transmits the wireless packet and thereafter ***a receive-side STA*** transmits an acknowledgment packet (Ack) for the received wireless packet to the transmit-side STA,” while “another wireless channel used ***for simultaneous transmission***” is in use. '551 Patent at 2:30-37 (emphases added). As a result, “***throughput***

cannot be improved even if simultaneous transmission is performed using multiple wireless channels at the same time.” *Id.* at 2:48-51 (emphasis added).

A POSA understands that “throughput,” as used in the ’551 Patent, relates to transmission to a given user. Geier Decl. at ¶51. Specifically, the ’551 Patent relates to channel throughput, which depends on conditions relevant to the transmission channel and their effect on receipt by a given user, such as data rate, radio frequency interference, cross-channel interference, and multipath propagation. Geier Decl. at ¶51, *see e.g.*, ’551 Patent at 3:33-35 (“It is an object of the present invention to avoid leakage power from affecting an adjacent channel so as to improve throughput by simultaneous transmission.”); EX2006 (“Leung 2002”). The specification’s repeated references to interference occurring across frequency regions (*i.e.*, leakage) in the context of throughput (*e.g.*, 2:26-30, 34-37, 3:2-5), make this clear. Geier Decl. at ¶51. The discussion of MIMO technology further confirms that the ’551 Patent is directed to multiple channels accessible to a single user. Indeed, the ’551 Patent treats single-channel MIMO and using “multiple wireless channels” as *alternatives* to each other for transmitting packets simultaneously, which would make little sense if each of the “multiple wireless channels” were assigned to different users. Geier Decl. at ¶51, *e.g.*, ’551 Patent at cl. 1.

The '551 Patent addresses issues affecting throughput to a single user in a multichannel architecture by setting a “mandatory channel,” which is one of several available channels for transmission to that user. *E.g.*, '551 Patent at 5:52-57 (“In this embodiment, wireless channels #1, #2, and #3 are provided, and the wireless channel #1 is set as a mandatory channel for every STA...When the mandatory channel is busy, *each STA* does not perform transmission *even if there is other idle wireless channel.*”) (emphasis added). In other words, setting of a “mandatory channel” can help avoid a situation where ACK packets are not received on one channel while another channel is in use, thereby improving throughput. *E.g., id.* at 11:67-12:6 (“Thus, it is possible to avoid a situation that the transmit-side STA cannot receive a wireless packet addressed to an own STA. On the other hand, the other STAs can surely transfer a wireless packet to the transmit-side STA by transmitting the wireless packet after the mandatory channel becomes idle. Thus, throughput can be improved.”). The claims—which require setting a mandatory channel “that is always used,” and transmitting “only when the mandatory channel is idle”—clearly refer to these aspects of the “mandatory channel.” *See e.g.*, cl. 1; Geier Decl. at ¶¶70, 73.

B. The '551 Patent Pertains to CSMA Systems

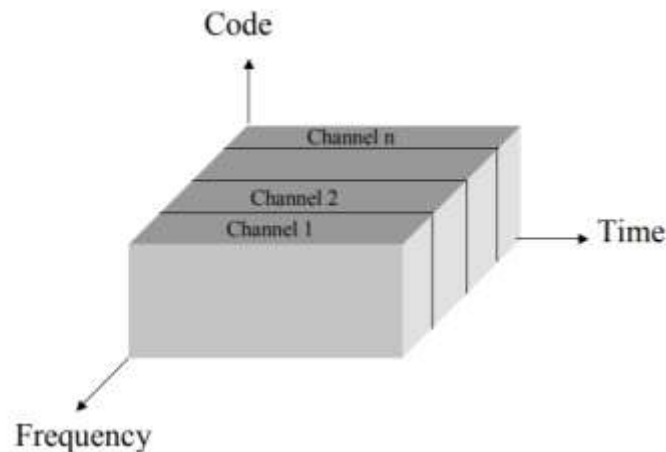
In its second asserted Ground based on Lundby and Shpak,⁴ Petitioner's arguments conflate references pertaining to Code Division Multiple Access (CDMA) systems with Carrier Sense Multiple Access (CSMA) systems with little regard for the crucial differences between the two. However, both the claims and specification of the '551 Patent make clear that its invention pertains to CSMA systems, not CDMA. Specifically, the '551 Patent's claims provide a novel channel architecture wherein a transmission is sent "only when the mandatory channel is *idle*." *E.g.*, '551 Patent at cl. 1. Further, the specification teaches that a channel is sensed to be idle by means of carrier sense, such as provided in the 802.11-1999 standard. *Id.* at 1:27-29, 43-47. Thus, the '551 Patent is directed to a wireless communication system that relies on CSMA as its underlying media access protocol. Geier Decl. at ¶54. This is significant because, as explained further below, the use of sensing-based access that lies at the heart of CSMA is a fundamentally different approach from the code-based access provided by CDMA, such that a POSA generally would not graft aspects of one system on to the other. *Id.*

⁴ EX1005.

As of 2003,⁵ a POSA understood that there are different classes of methods for allowing multiple users to share a wireless channel: (1) those that **partition** the channel among users using some parameter, such that each user has exclusive use within that parameter (“channel partition” methods), (2) those that allow users “**random access**” to the channel, and (3) those wherein users take turns in a fixed fashion (“**polling**” methods). Geier Decl. at ¶55; citing EX2007 (“Rochester Lecture”) at 4, EX2008 (“Myers 2002”) at 124-127, EX2009 (“Cornell Lecture”) at 10, EX2010 (“Proakis”) at 849, 862.

“Channel partition” methods manage user access to the channel in a static way, such as by assigning different frequencies, time slots, or codes to different users. For example, in Frequency Division Multiple Access (FDMA), each user is allotted a distinct frequency band, or channel, for their exclusive use, as illustrated in the figure below. Geier Decl. at ¶56; *e.g.* “Rochester Lecture” at 6.

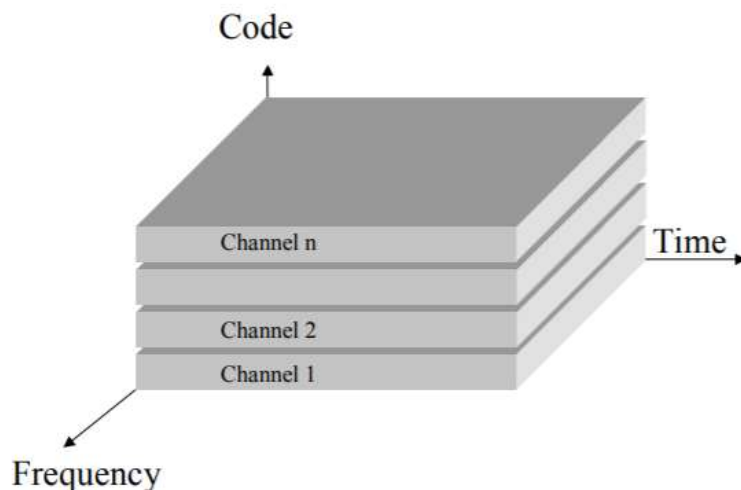
⁵ NTT makes no representation that the earliest priority date of the ’551 Patent is September 2003. Nonetheless, for the purposes of this Preliminary Response only, NTT will treat this date as relevant for determining the state of the art around the priority date of the ’551 Patent.



“Rochester Lecture” at 6.

Another channel partitioning method is Code Division Multiple Access (CDMA), wherein each user is assigned a different code for transmissions. Geier Decl. at ¶57. Receivers of a transmission are able to use this code to retrieve transmissions. *Id.* at ¶57, citing Proakis at 849, (Myers 2002) at 126. When the selected codes are orthogonal to each other, multiple users can share the same frequency channel without interference. *Id.* CDMA may also be conceptualized as providing distinct “code-channels” in an abstract “code-space,” as illustrated below. *Id.* at ¶57. But, as a practical matter, CDMA is in fact a method for sharing access to a single channel. *Id.* at ¶57, citing *e.g.*, (Myers 2002) at 126 (“While FDMA and TDMA isolate transmissions into distinct frequencies or time instants, CDMA allow transmissions **to occupy the channel at the same time** without interference.”) (emphasis added); Proakis at 843 (“In this method, each user is assigned a unique code sequence or signature sequence that allows the user to

spread the information signal across the assigned frequency band....the signal transmissions among the multiple users completely overlap both in time and in frequency.”) (emphases added). CDMA is the multiple access method implemented in standards such as cdma2000. *Id.*, citing Lundby at 6:35-42. Various types of codes may be used to implement CDMA-based access, but the most common type are Walsh codes, which are a type of orthogonal code. Geier Decl. at ¶57; *also* Lundby at 2:8-11 (“In a CDMA system, one could double the effective bandwidth on the forward link by halving the length of the Walsh codes used for orthogonally spreading the encoded bit stream.”); EX2011 (“CDMA Results”). Walsh codes are used to establish “channels” that occupy the same frequency, but are differentiated by assigned code. *See id.*; “Rochester Lecture” at 6.



Rochester Lecture at 6.

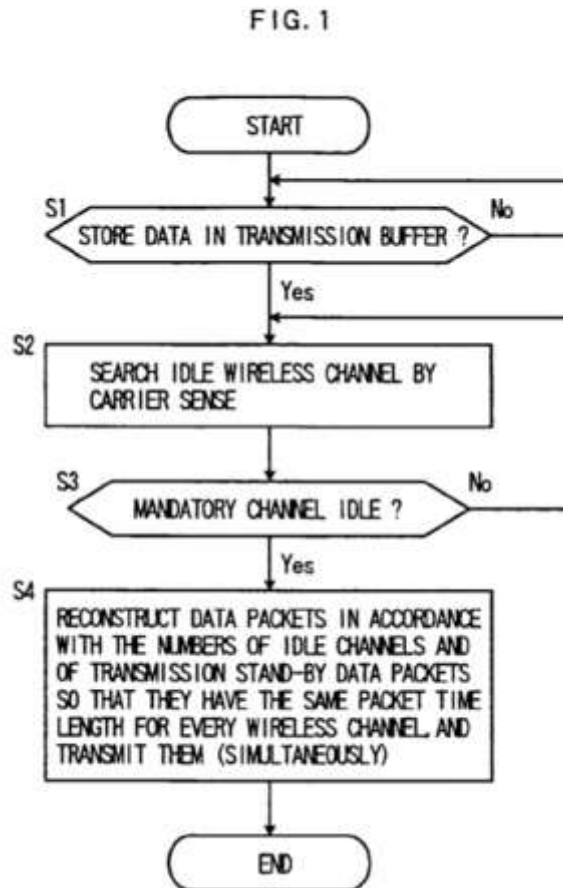
“Polling methods” are similar to “channel partitioning” methods in that there is a fixed system for awarding channel access, such as having an AP sequentially “poll” stations one after the other in a fixed cycle.⁶ Geier Decl. at ¶58; *also e.g.*, “Cornell Lecture at 5.

CSMA, in contrast, falls within the category of “random access.” Geier Decl. at ¶59; Proakis at 862. In a CSMA scheme, there is no assignment of channel access. *Id.* at ¶59; “Cornell Lecture” at 5-6. Instead, each user must first “sense” whether the wireless channel is in use (busy) or clear (idle) before transmitting. Geier Decl. at ¶59; Proakis at 868. Thus, CSMA is considered a “contention-based” method, because each user must “contend” for an opportunity to transmit. Geier Decl. at ¶59; *also e.g.*, EX2012 (“Northeastern Lecture”) at 16. CSMA is implemented in 802.11-1999, and serves as the foundation on which multi-access is based for the entire 802.11 family of standards. Geier Decl. at ¶59.

A POSA would understand that the ’551 Patent pertains to a CSMA system, because the claims require that transmission be governed by detection of an “idle” state. *E.g.*, ’551 Patent at cl. 1; Geier Decl. at ¶60. The specification teaches that

⁶ Some commentators group channel partitioning and polling methods together as a form of “coordinated access,” to contrast these with “random access” methods such as CSMA. *E.g.*, EX2022 (“UNC Lecture”) at 5.

detection of an “idle” state by means of carrier sensing, such as shown in Fig. 1 below:



By contrast, channel partitioning systems such as CDMA, generally do not use such sensing methods because they rely on fixed codes for providing multi-user access, which is antithetical to the “random” access provided by sensing.

III. CLAIM CONSTRUCTION

A. “...Transmitting a plurality wireless packets simultaneously...”

At the time of this writing, the parties to the parallel district court litigation, including the Petitioner, dispute whether this phrase appearing in the preamble is

limiting, although both sides have agreed that it should be given its plain meaning. EX2013 (“Defendant’s Constructions”), EX2016 (“Plaintiff’s Constructions”).

Petitioner has not proposed this term, nor indeed any other terms, for construction in its Petition for this proceeding. Patent Owner disagrees that this phrase in the preamble is limiting. However, the Board need not address this issue for the purposes of resolving the Grounds presented here.

B. “Multiple wireless channels”/ “wireless channels”

At the time of this writing, the parties to the parallel district court litigation, including the Petitioner, have proposed different constructions for the phrase “multiple wireless channels” and “wireless channels.” These constructions are set forth below:

Patent Owner’s proposal: “multiple frequency ranges provided to transmit packets”

Petitioner’s proposal: “distinct frequency regions used to transmit different wireless packets”

The parties disagree on certain aspects of the construction, such as whether frequency regions may be characterized as “distinct” and whether channels must be “used to transmit different wireless packets.” However, for the purposes of determining whether to institute, the Board need only consider that both sides have agreed that “wireless channels,” as used in the ’551 Patent, refers to frequency

regions or ranges.⁷ Nonetheless, the Petitioner’s arguments pertaining to the Lundby reference appear to conflate code-based channels with frequency based channels. As discussed further with respect to Ground 2, Lundby does not teach the use of multiple frequency channels.

C. Petitioner Misconstrues “Mandatory Channel”

At the time of this writing, Petitioner appears to be studiously avoiding any explanation of what a “mandatory channel” is. In the parallel district court action, Petitioner has proposed that “mandatory channel” be given its “plain meaning” without explaining what that meaning should be. EX2013 (“Defendant’s Constructions”). Similarly, Petitioner has not put forth any claim construction of “mandatory channel” in the Petition itself. Nonetheless, the Petitioner’s arguments make clear that its interpretation of “mandatory channel” is at odds with the ’551 Patent.

Specifically, the Petitioner’s arguments in view of Shpak and Bugeja imply that a “mandatory channel” need only be one that is “always used for

⁷ The claim construction process in the district court litigation is ongoing, and the parties are continuing to refine and negotiate their positions. As such, the constructions provided in this response, as well as the parties’ arguments relating thereto, may change over time. However, at this juncture, it does not appear to Patent Owner NTT that there is a meaningful difference between a “frequency region” as opposed to a “frequency range,” since frequency is one-dimensional. Geier Decl. at ¶66.

transmission,” even if it is actually the *only* channel available. *See e.g.*, Paper No. 2 at 18, 59. Notably, Petitioner does not—because it cannot—rely on the specification to support its arguments. Instead, the Petitioner devotes over three pages to a discussion of the word “or” in the *preamble* to assert that transmission on a single channel can suffice. Paper No. 2 at 27-30. This line of argument misses the point—even if the claimed method encompasses transmission on a single channel, the specification makes clear that such transmission must at least include the “mandatory channel,” which is one of *multiple* available channels. Indeed, a POSA would recognize that “mandatory channel” is not a previously known term of art, and thus recourse to the specification is necessary to understand what it means. *See* Geier Decl. at ¶69. NTT submits that, as properly construed, a “mandatory channel” is **“one of several frequency channels provided between two STAs, whose busy/idle state determines whether there is transmission regardless of idle state of the other available channels.”**

As discussed above, the ’551 Patent pertains to multi-channel communication systems. Indeed, in *every* embodiment, a “mandatory channel” is identified from *one of multiple* available channels provided between a transmitting and receiving stations (STAs). *E.g.*, ’551 Patent, at 5:52-57 (“In this embodiment, wireless channels #1, #2, and #3 are provided, and the wireless channel #1 is set as a mandatory channel for every STA.”); 7:8-12 (“In this example, for wireless

packets addressed to the STA A, simultaneous transmission is performed using two wireless channels as the wireless channels #1 and #2 because the wireless channel #1 set as the mandatory channel is idle.”). Indeed, the specification states that one way of conceptualizing the “mandatory channel” is as “a wireless channel having the highest priority *among wireless channels* that have a plurality of priorities.” *Id.* at 3:57-60 (emphasis added). Further, as discussed above, the ’551 Patent teaches that the simultaneous use of multiple channels, including the mandatory channel, improves *throughput*, which is understood to refer to data receipt by a given user. Geier Decl. at ¶¶50-52, 75. Thus, nothing in the specification suggests that a “mandatory channel” can be the only channel assigned to a given user (or receiving STA).

The specification further teaches that the “mandatory channel” is distinguishable from other channels accessible to a given user. For instance, as discussed above, the mandatory channel “can be regarded as a wireless channel having the highest priority.” *Id.* at 3:57-60. In concrete terms, the specification explains that this means that “[w]hen the mandatory channel is busy, each STA does not perform transmission even if there is other idle wireless channel.” *Id.* at 3:56-57. Thus, the “mandatory channel” is identifiable as such because it is *its* state that governs whether a transmission may take place, not the idle state of the other channels provided. Geier Decl. at ¶¶52, 71-72.

The claim language conforms to the specification’s teachings. For example, the claims teach that a “mandatory channel” must “always be used,” and that transmission occurs “only when the mandatory channel is idle.” *E.g.*, ’551 Patent at cl. 1. This language specifying that the “mandatory channel” must always be used clearly contemplates that it is one of multiple channels provided, but ties transmission on any channel to the idle state of the “mandatory channel.” *See e.g.*, Geier Decl. at ¶¶70, 73. Further, for example, dependent claim 4’s requirement of an ability to “selectively [use] the multiple wireless channels or the MIMO” further confirms that, while the method of independent claim 1 may be performed using a single channel with MIMO transmission, it remains possible to select to use “multiple wireless channels” instead. *See id.* at ¶73.

**IV. PETITIONERS FAIL TO DEMONSTRATE THAT THERE IS REASONABLE
LIKELIHOOD ANY CHALLENGED CLAIM IS UNPATENTABLE UNDER
GROUND 1: CLAIMS 1, 3, 5, 7**

In its first ground, Petitioner relies on Shpak as allegedly disclosing a “mandatory channel.” This is incorrect. Shpak, as Petitioner admits, discloses only a *single channel* for wireless communication. Paper No. 2 at 24 (“POSAs would have understood Shpak to disclose a conventional SISO system in which an AP transmits packets to a station over a SISO “common frequency channel”). As explained above, the ’551 Patent teaches that the “mandatory channel” is

necessarily one of several available channels between two stations, and cannot merely be the *only* channel provided.

Further, because Petitioner relies on Ho only for the disclosure of MIMO in a general sense, the combination of Shpak and Ho (“Shpak-Ho”) also fails to disclose the claimed “mandatory channel.”

1. Claim 1

(a) [1PRE]

Petitioner spends over three pages of its Petition discussing whether the word “or” that appears in the preamble is disjunctive. For the purposes of this Preliminary Response, Patent Owner does not dispute that it is. However, Petitioner misses the point of the ’551 invention: even if the *preamble* indicates that transmission using only one of the three enumerated options would suffice, the *claimed steps* require that such transmission include the “mandatory channel,” which is necessarily one of multiple available channels. As explained in more detail below, the combination of Shpak-Ho provides only a *single channel* for transmission, and thus cannot satisfy this claim.

(b) [1A] setting a mandatory channel that is always used for transmission;

The combination of Shpak-Ho does not disclose “setting a mandatory channel,” as this phrase is properly construed, because this step is directed to identifying *one of several* frequency channels provided for transmission between

two associated stations as a “mandatory channel,” not merely “arranging” to use the only channel available.

As explained above in section II(A), the ’551 Patent is directed to multi-channel transmission techniques, wherein *multiple channels* are provided between two devices, such as an AP and client device. Indeed, the ’551 Patent teaches that the mandatory channel “can be regarded as a wireless channel having the highest priority *among wireless channels* that have a plurality of priorities.” ’551 Patent at 3:57-60 (emphasis added). Moreover, one of the stated goals of the ’551 Patent is to improve *throughput* of simultaneous transmission by addressing power leakage, a scenario that can only occur when multiple channels are provided between a single AP and associated client. ’551 Patent at 3:33-35; Geier Decl. at ¶¶50-52, 80.

Thus, the combination of Shpak-Ho fails to disclose a “mandatory channel” because Shpak-Ho’s “common frequency channel” is not one of multiple channels provided for transmission, but rather the *only* channel available. Further, Shpak-Ho fails to disclose the step of “setting a mandatory channel” because the ’551 Patent teaches that identification of a “mandatory channel” does not render it the only channel available—rather, as some preferred embodiments indicate, stations with an associated “mandatory channel” have the ability to use this channel together with another channel that is idle. *E.g.*, ’551 Patent at 6:8-11 (“In this

example, since the wireless channel #1 as the mandatory channel is idle, the wireless packets is simultaneously transmitted by using two wireless channels as the wireless channels #1 and #2.”). In other words, “setting a mandatory channel” does not change the fact that the “mandatory channel” is but one of multiple provided channels. Geier Decl. at ¶¶73, 81. Thus, Petitioner’s interpretation of this phrase in the context of Shpak-Ho clearly contradicts the specification.

Petitioner appears to suggest that the phrase “that is always used for transmission” supports its reading of “mandatory channel.” *See* Paper 2 at 34. While it is true that the “mandatory channel” must always be used, Petitioner’s interpretation of this step—that “setting a mandatory channel” can result it in it being the *only* channel—would render it a nullity. Indeed, the claim language itself indicates the presence of other channels. For example, the very use of the qualifier “mandatory” indicates the existence of a non-mandatory state, which Petitioner’s interpretation fails to acknowledge. *See also* Geier Decl. at ¶¶70, 73, 82. Specifically, the ’551 Patent clearly teaches that a “mandatory channel” may be so termed because its idle state governs transmissions in a way that differs from that of other available channels. *Id.* However, if “setting a mandatory channel” means little more than assigning a single channel for use, this channel paradoxically stops being “mandatory”; once assigned, every legacy 802.11 channel, such as in Shpak, would be used in exactly the same way as any other

assigned channel—a transmission would occur if the assigned channel is idle, regardless of the state of other channels. *Id.* at ¶82. Put another way, in a single-channel system, there are no other channels against which a purported “mandatory channel” may be distinguished as “mandatory.” *Id.* at ¶¶73, 82

As another example, the language requiring the “mandatory channel” to “always” be used likewise indicates that other channels are provided. Common sense dictates that if no other channels *could* be used (such as in a SISO system), there would be no need to specify that the “mandatory channel” must “always” be used. Petitioner’s interpretation of this language would render it trivial, as any wireless communication must use some form of channel, regardless of whether it is “mandatory” or not. Geier Decl. at ¶83.

(c) [1B] transmitting the wireless packets by using a wireless channel/wireless channels that includes/include the mandatory channel, only when the mandatory channel is idle.

The combination of Shpak-Ho fails to disclose the step of “transmitting...by using a wireless channel/wireless channels that include/includes the mandatory channel,” because, *inter alia*, Shpak-Ho fails to disclose the claimed “mandatory channel,” as discussed above.

Further, similar to step [1A], the language of step [1B] plainly indicates that multiple channels are provided for transmission, such as by sending wireless

packets using “wireless channels that...include the mandatory channel.” *See also* Geier Decl. at ¶¶70, 73, 85. The language limiting transmission to times “*only* when the mandatory channel is idle” also relies on the availability of other channels—were it otherwise, this language, too, would be rendered a nullity because single-channel CSMA systems have always waited for the channel to be idle before transmitting. *Id.* at ¶85; *also* ’551 Patent at 1:30-37. It is not trivial, however, to limit transmission to times when only one of multiple channels is idle, even if other idle channels are available. This is precisely what the ’551 Patent teaches—“[w]hen the mandatory channel is busy, each STA does not perform transmission even if there is another idle wireless channel.” *E.g.*, ’551 Patent at 3:56-57. The claim language limiting transmission to times “only when the mandatory channel is idle” is clearly directed to this type of scenario. Geier Decl. at ¶¶71-72, 85.

2. Claim 3

Claim 3 depends from claim 1 or claim 2. Shpak-Ho fails to disclose the limitations of claim 3 for at least the following reasons: First, because claim 3 depends from claim 1, Shpak-Ho fails to disclose this claim because it fails to disclose the elements of claim 1. Second, Petitioner has not attempted to argue that Shpak-Ho discloses the elements of claim 2. Thus, Petitioner fails to meet its

burden to show that Shpak-Ho can meet the requirements of claim 3 to the extent it depends from claim 2. Geier Decl. at ¶83.

3. Claim 5

- (a) **a unit setting a mandatory channel that is always used for transmission; and transmitting the wireless packets only when the mandatory channel is idle by using a wireless channel or wireless channels that includes/include the mandatory channel.**

Claim 5 is the apparatus-analog of claim 1. Thus, Shpak-Ho fails to disclose claim 5 because it fails to disclose a unit for performing the steps of claim 1. Geier Decl. at ¶87.

4. Claim 7

Dependent claim 7 depends from claims 5 or 6, and is the apparatus analog of claim 3. Because Shpak-Ho fails to disclose claim 5, it necessarily also fails to disclose claim 7 for similar reasons. Petitioner has not attempted to show that Shpak-Ho can meet the requirements of claim 6. Geier Decl. at ¶88.

V. PETITIONERS FAIL TO DEMONSTRATE THAT THERE IS REASONABLE LIKELIHOOD ANY CHALLENGED CLAIM IS UNPATENTABLE UNDER GROUND 2: CLAIMS 1, 3-5, 7-8

Petitioner argues that a POSA would be motivated to combine the Shpak reference with Lundby such that Shpak's "common frequency channel" can be treated as a "primary channel" as disclosed in Lundby, which can be supplemented by another "secondary channel" "on an ad hoc basis." Paper 2 at 41-42. This

argument fundamentally misrepresents what Lundby’s “primary” and “secondary” channels are. Contrary to Petitioner’s assertion, Lundby does not teach addition of a distinct frequency channel to Shpak’s single channel. Rather, as addressed further below, Lundby’s “primary” and “secondary” channels are *code channels* that occupy *the same frequency*. Geier Decl. at ¶¶89, 92-93. Thus, the introduction of Lundby fails to cure Shpak’s deficiencies, in that neither reference, alone or in combination, provides a mandatory channel that is one of multiple available frequency channels. *Id.* at ¶89. A POSA would not be motivated to alter Shpak and Lundby in the manner suggested by Petitioner, as there is no suggestion in Lundby to use anything other than code channels. *Id.* at ¶¶89, 94-95. Indeed, given the substantial differences between 802.11’s CSMA system and Lundby’s CDMA system, a POSA would not have been motivated to combine these references at all. *Id.* at ¶¶89, 96.

Further, even if the references could be combined, Lundby’s reliance on codes teaches against sensing of the idle state of a “mandatory channel” as a precondition for transmission, because the very concept of code-based access is antithetical to the use of sensing-based access. *Id.* at ¶¶90, 98

1. Claim 1

(a) [1PRE]

Petitioner claims that the combination of Shpak and Lundby (“Shpak-Lundby”) meets the preamble’s scenario of using “multiple wireless channels” to transmit wireless packets, but this is not correct. As discussed above, the ’551 Patent uses “multiple wireless channels” to refer to multiple *frequency*-based channels provided for transmission between an associated client and AP. Shpak-Lundby, however, at most discloses multiple *code*-based channels that occupy the **same** frequency channel. *E.g.*, Geier Decl. at ¶¶91-93.

Specifically, Lundby teaches that “[i]n a CDMA system, one could double the effective bandwidth on the forward link by halving the length of the **Walsh codes** used for orthogonally spreading the encoded bit stream.” Lundby at 2:8-11. Lundby is concerned with the way in which such codes may be allotted, balanced against power limitations in CDMA systems: “What is desired is a way to increase the system performance of a telecommunications system...by taking into account the fact that the system is **both code limited and power limited.**” *Id.* at 2:57-61. Lundby addresses these issues by providing methods for using “primary” and “secondary” code channels, such that use of a “secondary” code channel is determined based on balancing criteria such as transmit power. *E.g., id.* at 4:58-67 (“[N]ot only must “excessive” power be determined, but also the number of

available spreading codes must be above the first threshold value in order for the process to move to block 250... This check is done because, although it is desirable to reduce power by transmitting data over two channels, **a code needs to be available to allocate to the secondary channel.”**).

As it was well-known in the art that channels distinguished by the use of Walsh codes occupy the *same* frequency, Lundby’s primary and secondary channels actually occupy a single channel within the meaning of the ’551 Patent, in this case the forward link channel to a mobile user. Geier Decl. at ¶93, citing Lundby at 2:8-11, 6:39-40. Specifically, in conventional CDMA systems such as cdma2000, two distinct frequency bands are set out for use, one for transmitting data to a mobile user (forward link), and another for transmitting data back from a user to the base station (reverse link). Geier Decl. at ¶93; EX2014 (“CDMA-Quick Guide”). Notably, while it is known that CDMA does involve the use of frequency channels, Lundby **does not** teach the addition of a distinct frequency channel, but relies on partitioning the forward link channel using codes instead. *Id.* at ¶93, *e.g.*, Lundby at 4:58-67.

Given the true scope of Lundby’s teachings, a POSA seeking to apply Lundby would not be motivated to add another frequency channel to Shpak. Geier Decl. at ¶94. Lundby neither teaches nor suggests adding another 802.11b channel to serve as a “secondary” channel, as Petitioner suggests. Rather, Lundby confines

itself to code-based channels occupying the forward link frequency channel. *Id.*

Indeed, the problem that Lundby purports to address is rooted in the way in which Walsh codes are used: “Although decreasing the Walsh code length effectively increases the bandwidth between the remote station and the base station, it is undesirable to decrease the Walsh code length because doing so **decreases the pool of Walsh codes**...the system is said to be ‘**code limited**.’” Lundby at 2:14-24 (emphasis added). Lundby’s solution, too, is specific to code channels: For example, Lundby provides detailed circuitry tailored to implement multiple code channels for one user, such as Walsh despreaders, which are responsible for generating the codes responsible for the primary and secondary channels to exist (*e.g.*, *id.* at 14:54-65, 15:45-60, 18:17-83, Figs 6, 7 and 9,), and routines for determining the pool of available codes (*e.g.*, *id.* at 4:56-67, 8:8-19). Only ends-based hindsight could account for Petitioner’s assertion that a POSA would take Lundby’s code-specific teachings as a basis for adding a *frequency* channel. Geier Decl. at ¶94. To do so distorts Lundby’s teachings beyond all recognition.

Rather, *if* Lundby could be combined with Shpak *at all*, it would at most be used to partition Shpak’s single “common frequency channel” into two code channels that each occupy *the same frequency range*. Geier Decl. at ¶95. Indeed, as pointed out above, Lundby deliberately implements code-based channels in a single frequency channel even though it was known that multiple frequency

channels may be used in the context of CDMA. *Id.* However, as the Petitioner has acknowledged in the district court litigation, code channels are plainly not what the '551 Patent means when it refers to “multiple wireless channels.” *See* (“Defendant’s Constructions”).

However, a POSA would not have been motivated to combine Lundby with Shpak in the first instance. Shpak’s system, which is based on 802.11’s CSMA system, is a fundamentally different technology from CDMA. Geier Decl. at ¶96. A POSA cannot simply replace or add CDMA-based access to a CSMA system. *Id.* For instance, CDMA requires the management of distinct code sequences for each code channel, which introduces substantial complexity as compared to CSMA. *Id.* The expense and complexity of CDMA equipment is one of the well-known trade-offs of such systems. *Id.*; *also e.g.* “Rochester Slides” at 20 (citing implementation complexity as a disadvantage of CDMA); EX2015 (“CDMA Testing”) (describing testing complexity for CDMA systems). Thus, replacement of CSMA with CDMA or addition of CDMA to a CSMA system would require significant redesign and testing. Geier Decl. at ¶96. The performance of such a system is far from predictable. *Id.* A POSA would also have been discouraged from altering standardized forms of transmission by the potential interoperability issues with standardized devices on the market. *Id.*

Moreover, Shpak itself teaches against deviating from 802.11's standardized forms of transmission. In fact, Shpak repeatedly emphasizes that transmissions between an AP and a mobile station uses then-existing 802.11 protocol, including in the process of associating a mobile station with a given AP (Shpak at ¶¶37-38), and transmitting data within 802.11's time constraints (*e.g.*, *id.* at ¶¶39, 46). Shpak teaches that one of the key advantages of its system is maintaining compatibility with legacy 802.11 devices. *Id.* at ¶¶38. To the extent that CDMA may be relevant, Shpak deliberately limits its use to communication amongst the APs themselves, so as to maintain 802.11 compliance for transmissions to clients on its "common frequency channel." *See id.* at ¶¶41; Geier Decl. at ¶¶97. Thus, Shpak itself teaches against altering the common frequency channel using CDMA. Geier Decl. at ¶¶97. By the same token, Shpak teaches against modifying existing single-channel 802.11 communications to incorporate another frequency channel, as this too would destroy Shpak's ability to accommodate legacy 802.11 devices. *Id.*

Finally, Shpak-Lundby does not teach the use of carrier sensing to detect the idle state of multiple wireless channels. As discussed in section II(B), *supra*, carrier-sensing is the hallmark of a random-access form of multi-user access scheme. Lundby, on the other hand, is directed to CDMA systems, which rely on the fixed assignment of codes to organize access. Thus, Lundby teaches against sensing of an idle state on its primary channel, because its availability is based on

fixed assignment. There is no teaching or suggestion that either the primary or secondary channels should or could be used based on idle state, because carrier sensing requires a distinct carrier (*i.e.*, frequency) whereas code channels share the same carrier. Geier Decl. at ¶98. There is simply nothing in Lundby that suggests its teachings are compatible with CSMA systems, nor any hint of how to modify its methods for CSMA. *Id.*

(b) [1A] setting a mandatory channel that is always used for transmission;

The Shpak reference, as discussed with respect to Ground 1, discloses neither the claimed “mandatory channel” nor the step of “setting a mandatory channel.” Lundby does not cure these defects.

As discussed above, Lundby does not teach the use of multiple frequency channels, but rather confines itself to the use of code-based channels sharing a single frequency channel. Thus, Lundby does not teach either a “mandatory channel” that is one of multiple frequency channels provided for transmission, nor the step of “setting a mandatory channel.” Geier Decl. at ¶100.

Further, for at least the reasons addressed with respect to the preamble ([1PRE]), a POSA would not be motivated to combine Shpak with Lundby to add another frequency channel to Shpak. Lundby’s teachings are rooted in issues affecting the use of codes to create code channels—there is simply no reason,

absent hindsight, to apply Lundby's teachings to frequency channels. Geier Decl. at ¶¶94, 101.

- (c) **[1B] transmitting the wireless packets by using a wireless channel/wireless channels that includes/include the mandatory channel, only when the mandatory channel is idle.**

Shpak-Lundby also fails to teach the step of transmitting wireless packets using “wireless channels that...include the mandatory channel, only when the mandatory channel is idle.” As discussed above, neither Shpak nor Lundby teach a “mandatory channel” that is one of multiple frequency channels provided for transmission. Further, a POSA would not be motivated to add a frequency channel to Shpak's single channel using Lundby, because Lundby's teachings are limited to code channels. Thus, Shpak-Lundby does not teach the step of transmitting on a “mandatory channel.” Geier Decl. at ¶102.

Moreover, as discussed above, Lundby teaches against transmission based on an idle state because its teachings are directed to the use of codes to govern access. Geier Decl. at ¶¶98, 103. As such, Lundby teaches that there is no need to sense the state of a primary channel or secondary channel, because channel availability is based only on the availability of codes. *Id.*; *e.g.*, Lundby at 4:56-67, 8:8-19. A POSA would not have been motivated to convert Lundby's code

channels into frequency channels as there is no suggestion to do so. Geier Decl. at ¶¶94, 98 103.

2. Claim 3

Dependent claim 3 depends from claims 1 or 2. Thus, Shpak-Lundby does not disclose claim 3 for at least the reasons addressed with respect to claim 1. Further, Petitioner has made no attempt to argue that Shpak-Lundby discloses the elements of claim 2, and thus cannot meet its burden as to claim 3 to the extent it incorporates claim 2. Geier Decl. at ¶104.

Thus, Shpak-Lundby does not disclose a “wireless packet communication method according to claim 1 or 2, wherein the plurality of wireless packets transmitted simultaneously are set to have a same or equivalent packet time length that corresponds to a packet size or a transmission time.” Geier Decl. at ¶105.

3. Claim 4

Dependent claim 4 depends from claims 1 or 2. Shpak-Lundby does not disclose any of the methods of claims 1 or 2 for at least the reasons addressed above in claim 3. Further, neither Shpak nor Lundby discloses the use of MIMO, or “multiple wireless channels” within the meaning of the ’551 Patent. Geier Decl. at ¶106. Thus, Shpak-Lundby does not disclose “simultaneously transmitting wireless packets selectively using the multiple wireless channels or the MIMO.”

4. Claim 5

Independent claim 5 is the apparatus analog of claim 1. As discussed with respect to claim 1, Shpak-Lundby fails to disclose the step of “setting a mandatory channel that is always used for transmission” or “transmitting...only when the mandatory channel is idle by using ...wireless channels that include...the mandatory channel.” Thus, for similar reasons, Shpak-Lundby fails to disclose a unit for performing these steps. Geier Decl. at ¶107.

5. Claim 7

Claim 7 depends from claims 5 or 6, and is the apparatus analog of claim 3. Thus, Shpak-Lundby fails to disclose claim 7 for reasons similar to those addressed for claims 5 and 3. Geier Decl. at ¶108. Petitioner has not attempted to show that Shpak-Lundby can meet the requirements of claim 6.

6. Claim 8

Claim 8 depends from claims 5 or 6, and is the apparatus analog of claim 4. Thus, Shpak-Lundby fails to disclose claim 8 for reasons similar to those addressed for claims 5 and 4. Geier Decl. at ¶109. Petitioner has not attempted to show that Shpak-Lundby can meet the requirements of claim 6.

**VI. PETITIONER FAIL TO DEMONSTRATE THAT THERE IS REASONABLE
LIKELIHOOD ANY CHALLENGED CLAIM IS UNPATENTABLE UNDER
GROUND 3: CLAIMS 1-3, 5, 7**

Petitioner argues that Bugeja, in combination with Ho (“Bugeja-Ho”), discloses transmission using “a single wireless channel determined to be idle and MIMO” and therefore meets the claims’ requirement of transmitting on a “mandatory channel that is always used for transmission.” As for Ground 1, Petitioner is placing unwarranted reliance on the word “or” in the preamble, and ignoring what the ’551 Patent teaches about the “mandatory channel.” Petitioner admits that Bugeja, like Shpak, teaches that a *single* channel is generally assigned to a given client. Paper No. 2 at 59. Needless to say, this is not a “mandatory channel,” which is one of multiple channels provided between associated STAs, because it is the *only* channel provided. Geier Decl. at ¶110.

Moreover, Bugeja teaches against the idea of using a “mandatory channel,” because its only teaching relevant to a multi-channel architecture within the meaning of the ’551 Patent is that all available channels should be used indiscriminately. This is the opposite of what the ’551 Patent teaches. Geier Decl. at ¶111.

1. Claim 1

(a) [1PRE]

As for Ground 1, Petitioner argues that Bugeja-Ho's assignment of a single channel meets the preamble because of the word "or." Just as for Shpak, Petitioner's reliance on the presence of alternatives misses the point of the '551 Patent. As discussed in detail below, provision of a single channel cannot meet the claims of the '551 Patent.

(b) [1A]

Bugeja-Ho does not disclose the step of "setting a mandatory channel," because these references, alone or in combination, fail to disclose a "mandatory channel." Since Petitioner relies on Bugeja for the alleged disclosure of a "mandatory channel," the below discussion focuses on this reference.⁸

As discussed above, the claimed "mandatory channel," properly construed, is one of several frequency channels between two associated STAs, such as an AP and client. Thus, Bugeja's assignment of a single channel to a given client cannot satisfy the claimed "mandatory channel." In other words, for reasons similar to those addressed as to Ground 1, assignment of a single channel cannot meet the step of "setting a mandatory channel," because to do so would, by definition, render it not a "mandatory channel." Geier Decl. at ¶¶111, 114.

⁸ As in Ground 1, Ho is cited only for a general disclosure of single-channel MIMO.

Moreover, Bugeja teaches against setting of a mandatory channel within the meaning of the '551 Patent. Specifically, the '551 Patent makes clear that the “mandatory channel” is mandatory because it is treated *differently* from other channels, in that transmission can occur *only* when the “mandatory channel” is idle, as opposed to when *any* channel is idle. Geier Decl. at ¶115, citing '551 Patent at 3:56-57. Bugeja, however, teaches that transmission can take place on a secondary channel regardless of whether the primary channel is idle. *Id.* Specifically, Bugeja indicates that transmission on this channel would occur whenever it is idle, without *any* indication that transmission on the secondary channel is tied to the idle state of the primary channel assigned to a different client. *See* Bugeja at ¶32 (“A client 410 in the inner region 410 is assigned the primary channel **or any of the secondary channels...**”) (emphasis added); Paper No. 2 at 63 (Bugeja-Ho uses standard CSMA/MA protocols to determine idle state before transmitting), Geier Decl. at ¶115. In this sense, Bugeja treats all channels the same because transmission on any channel—whether primary or secondary—does not depend on the idle state of another. Geier Decl. at ¶115. This is the opposite of what the '551 Patent teaches.

Petitioner admits that a single-channel client may be assigned to only a secondary channel for transmission, but contends that this channel would not be a “mandatory channel.” Paper No. 2 at 59, 68. However, Petitioner’s arguments

only reinforce the fact that Bugeja does **not** disclose a “mandatory channel.” One need only consider the logical implications of Petitioner’s proposal that a “mandatory channel” is only one that is always used for transmission “for a particular device” (Paper No. 2 at 62). If this construction were adopted, then a secondary channel assigned to a single-channel client in the inner region also becomes “mandatory” for that device. Geier Decl. at ¶116. In other words, if Petitioner’s understanding were adopted, there would be no distinction between Bugeja’s primary and secondary channels—they would, paradoxically, all be “mandatory” upon assignment to a single-channel client, which in effect means that *none* of them are “mandatory” because they are treated the same way for transmission purposes. *Id.*; *see also, Merck & Co. v. Teva Pharm. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) (“A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.”).

A similarly nonsensical result obtains for the Petitioner’s treatment of Bugeja’s multichannel clients. For example, Petitioner argues that Bugeja’s secondary channels are not mandatory because a multichannel client in the inner region may transmit on *either* of the secondary channels, such that neither one is necessarily used. Paper No. 2 at 68, 70. This argument is self-defeating and contradicted by Bugeja’s explicit teachings. *See* Geier Decl. at ¶117. First, Petitioner argues that the primary channel cannot be assigned to a client in the

inner region (*id.* at 70), but this is not correct. Rather, Bugeja explicitly teaches that the primary channel can be assigned to inner region clients: for example, Bugeja teaches that “[a] client 410 in the inner region 410 is assigned **the primary channel or any of the secondary channels**,” (Bugeja at ¶32), that “[a] client 410 located within the inner region 406 can communicate **on all three channels**” (*id.* at ¶33), and that “**the three channels can be used simultaneously** to upload or download when the client is located in the inner region 614 of the cell” (*id.* at ¶46). And, since the Petitioner admits that a multichannel client in the inner region need not use all channels provided to it at any given time (Paper No. 2 at 70), it follows that this multichannel client could transmit on a secondary channel and not the primary channel. Geier Decl. at ¶117. Once again, Petitioner’s arguments lead to a conclusion that none of Bugeja’s channels are “mandatory.”

Aside from the foregoing, Bugeja fails to teach any channel that is “always used for transmission.” Geier Decl. at ¶118. Specifically, since Bugeja explicitly teaches that a client in the inner region may be assigned to **one** of the secondary channels, this means that the primary channel **will not be used** if there is no client in the outer region, or if at a given moment the AP is only transmitting to the inner region client. *See* Bugeja at ¶35. Thus, Bugeja’s primary channel, which Petitioner alleges is the claimed “mandatory channel,” is **not** “always used for transmission,” as the claim requires. Geier Decl. at ¶118. Indeed, Petitioner

admits as much by pointing out that the only scenario where Bugeja's primary channel is "always used" is if *all* clients are in the outer region. *See* Paper No. 2 at 63.

(c) [1B]

Bugeja-Ho fails to disclose the step of "transmitting wireless packets...only when the mandatory channel is idle." As discussed above with respect to [1A], Bugeja-Ho does not disclose the claimed "mandatory channel." Thus, it follows that Bugeja-Ho also fails to disclose transmission on a mandatory channel.

Further, Bugeja teaches against transmitting "only when the mandatory channel is idle." For example, as discussed above with respect to [1A], Bugeja teaches that transmission on *any* channel—whether secondary or primary—will take place regardless of the state of any other channel. Thus, Bugeja does not teach transmitting *only* when the "mandatory channel" is idle. Geier Decl. at ¶¶118, 120.

Indeed, Bugeja teaches against tying transmission to the idle state of a "mandatory channel," even when multiple channels are available. Geier Decl. at ¶121. Specifically, there is only one embodiment in Bugeja that provides anything approaching the multi-channel architecture that the '551 Patent is directed to—the multi-channel client in Bugeja's inner region, which may use up to three channels to transmit and receive packets simultaneously. Bugeja at ¶46, Geier Decl. at

¶¶50, 121. Petitioner acknowledges this embodiment but, tellingly, provides no explanation of its significance. Paper No. 2 at 55. In fact, Bugeja indicates that this multi-channel client uses any one of, or all three channels, indiscriminately. *See* Bugeja at ¶46; Geier Decl. at ¶121. The only discernable criteria for channel use in this embodiment is a channel’s own idle state, not the idle state of the primary channel. Geier Decl. at ¶121.

2. Claim 2

For at least the reasons addressed below, Bugeja-Ho fails to disclose the limitations of claim 2, which require distinguishing between a STA A, which has a “mandatory channel” set, from a STA B, which does not have a “mandatory channel.”

(a) [2PRE]

As for claim 1, whether Bugeja-Ho discloses use of a single channel that may be combined with MIMO transmission technology is beside the point. Bugeja-Ho does not disclose a “mandatory channel” as required by the claims, as discussed further below and with respect to claim 1.

(b) [2A]

Bugeja-Ho does not disclose the step of “distinguishing an STA A from an STA B, the STA for which a mandatory channel is set, the STA B for which no

mandatory channel is set, the mandatory channel being always used for transmission.”

First, as discussed for claim 1, Bugeja-Ho does not disclose a “mandatory channel” because, in general, only a *single channel* is assigned to a given client, and because Bugeja does not teach any distinction between its primary and secondary channels based on whether it’s idle state governs transmission. *E.g.*, Geier Decl. at ¶¶110, 114, 125.

Second, since Bugeja teaches that channel(s) assigned to a client are used indiscriminately, there is no way to distinguish between an STA with an alleged “mandatory channel” from one without. *E.g.*, Geier Decl. at ¶126. For example, as discussed for claim 1, Petitioner appears to interpret “mandatory channel” as being merely a channel that is always used for a particular device, even if it is the only channel available. However, if this interpretation is adopted, then there is no way to distinguish between clients that are assigned the primary channel from those that have been assigned a secondary channel on the basis of whether they have a “mandatory channel”—rather, under Petitioner’s interpretation, clients assigned to a secondary channel also have a “mandatory channel” because they have one channel that is “always used” for transmission. *Id.* at ¶¶116 126. The same result obtains for multichannel clients, because Bugeja teaches that multichannel clients can access all three of the primary and secondary channels,

but need not transmit on any particular one. *See supra* at [1A]. Thus, multichannel clients likewise cannot be distinguished on the basis of whether they have a “mandatory channel.” Geier Decl. at ¶126.

Petitioner argues that because Bugeja can distinguish between clients “based on their distance from the AP,” this can satisfy claim element [2A]. Paper No. 2 at 68. This argument is beside the point—claim 2 requires distinguishing clients based on **whether it has a “mandatory channel,”** not whether it is close to an AP or not. As discussed above, if Petitioner’s interpretation of “mandatory channel” were adopted, then a secondary channel assigned to a single-channel client in the inner region also has a “mandatory channel.” Geier Decl. at ¶127.

(c) [2B]

Bugeja-Ho does not transmit to an STA A using a mandatory channel, for at least the reasons addressed above for claim element [1B]. Geier Decl. at ¶128.

(d) [2C]

Bugeja-Ho does disclose transmission using idle wireless channels without use of a “mandatory channel,” as to a multichannel client in Bugeja’s inner region. However, as pointed out above with respect to claim elements [1A] and [2A], this is the **only** form of transmission that Bugeja-Ho discloses. Indeed, the only criterion for transmission on a given channel in Bugeja is its own idle state. Geier Decl. at ¶¶115, 129; *see also* Paper No. 2 at 70. Thus, by Petitioner’s own

reasoning, a multichannel client in Bugeja's inner region may transmit over any one, two, or all three available channels, including transmitting over a secondary channel without concurrent use of a primary channel. *See supra* at [1A], Paper No. 2 at 70.

3. Claim 3

Claim 3 depends from claim 1 or claim 2. Bugeja-Ho fails to disclose the limitations of claim 3 because it fails to disclose either the elements of claim 1 or 2. Geier Decl. at ¶130.

4. Claim 5

Claim 5 is the apparatus-analog of claim 1. Thus, Bugeja-Ho fails to disclose claim 5 because it fails to disclose a unit for performing the steps of claim 1. Geier Decl. at ¶131.

5. Claim 6

Claim 6 is the apparatus-analog of claim 2. Thus, Bugeja-Ho fails to disclose claim 2 because it fails to disclose a unit for performing the steps of claim 2. Geier Decl. at ¶132.

6. Claim 7

Claim 7 depends from claims 5 or 6, and is the apparatus analog of claim 3. Thus, Bugeja-Ho fails to disclose claim 7 for reasons similar to those addressed for claims 3, 5, and 6. Geier Decl. at ¶122.

**VII. PETITIONER FAIL TO DEMONSTRATE THAT THERE IS REASONABLE
LIKELIHOOD ANY CHALLENGED CLAIM IS UNPATENTABLE UNDER
GROUND 4: CLAIMS 4 AND 8**

Claims 4 and 8 are dependent claims. Claim 4 depends from claims 1 or 2, and claim 8 depends from claims 5 or 6. Neither Shpak-Ho-Thielecke nor Bugeja-Ho-Thielecke disclose claims 4 or 8 for at least the following reasons.

1. Shpak-Ho-Thielecke fails to disclose claims 4 or 8

As discussed with respect to Ground 1, Shpak-Ho fails to disclose the elements of claim 1 because, *inter alia*, it fails to disclose the claimed “mandatory channel.” Thielecke does not cure these deficiencies, as it, too, only pertains to the use of a single frequency channel on which MIMO transmissions may take place. Geier Decl. at ¶135, *also e.g.*, EX1035 (“Thielecke”) at ¶9, 32. Thus, Shpak-Ho-Thielecke fails to disclose claim 4 for at least the same reasons as those discussed for claim 1. Petitioner has not attempted to argue that Shpak-Ho meets the requirements of claim 2. Geier Decl. at ¶135.

Claim 8, which is the apparatus analog of claim 4, depends from claims 5 or 6. Thus, Shpak-Ho-Thielecke does not disclose claim 8 for at least the same reasons as addressed for claim 5. Petitioner has not attempted to argue that Shpak-Ho meets the requirements of claim 6. Geier Decl. at ¶136.

Further, Shpak-Ho-Thielecke fails to disclose claims 4 or 8 because merely reducing the number of MIMO streams cannot satisfy “selectively using the

multiple wireless channels or the MIMO.” Geier Decl. at ¶137. Petitioner admits that Shpak-Ho only discloses a single channel that is MIMO, but argues that selecting between “multiple wireless channels or the MIMO” can consist simply of adjusting the number of MIMO data streams. Paper No. 2 at 73. This is plainly not what the claim language requires—the choice presented in claims 4 and 8 is between “multiple wireless channels” and “MIMO,” **not** between “single channel without MIMO” and “single channel with MIMO.” As the ’551 Patent teaches, MIMO technology permits multiple data streams in a *single channel*, and thus reducing or increasing the number of MIMO paths (“layers” or “strata” in Thielecke) does not affect the number of channels involved. *See e.g.*, ’551 Patent at 1:61-63 (“In MIMO, different wireless packets are transmitted from a plurality of antennas at the same time on **the same wireless channel.**”) (emphasis added); Geier Decl. at ¶137. Indeed, Petitioner admits that Thielecke at most contributes the ability to reduce the number of MIMO “subchannels,” not changing the number of channels provided in Shpak-Ho. *See* Paper No. 2 at 73.

2. Bugeja-Ho-Thielecke fails to disclose claims 4 or 8

As discussed above with respect to Ground 3, Bugeja-Ho fails to disclose the claims 1, 2, 5, or 6, because Bugeja-Ho fails to disclose a “mandatory channel,” and because Bugeja-Ho fails to disclose distinguishing between stations based on whether they have a “mandatory channel.” Thielecke fails to remedy these defects.

Thus, Bugeja-Ho-Thielecke fails to disclose claims 4 and 8 for at least the same reasons as those addressed with respect to claims 1, 2, 5 and 6. Geier Decl. at ¶138.

Further, as for Shpak-Ho-Thielecke, Bugeja-Ho-Thielecke also discloses no more than adjusting the number of MIMO data streams *within a single channel*.

There is no selection between “multiple wireless channels” and MIMO, as claims 4 and 8 require. Geier Decl. at ¶139.

VIII. THE BOARD SHOULD EXERCISE ITS DISCRETION TO DENY INSTITUTION

A. Section 314(a): Parallel Litigation Weighs Against Institution

The status and speed at which the parallel district court litigation is proceeding weighs heavily against institution of this Petition. While it is abundantly clear that institution of this IPR should be denied on the merits, there also is ample reason for the Board to deny institution on discretionary grounds. As Petitioner admits, the '551 patent is concurrently asserted against it in the Western District of Texas, along with three other patents, two of which have also been the subject of IPR petitions by this same Petitioner. Notably, the fourth patent has not yet been challenged in the PTAB despite the fact that the district court case has been pending for eight months. As discussed further below, each of the factors set out in *Apple Inc. v Fintiv, Inc.*, IPR2020-00019, Paper 11 (Mar. 20, 2020), weighs against institution.

Judge Albright has also been moving forward with jury trials as COVID cases have dropped in the Western District, and taken together with the lack of merit of this Petition, there is simply no need for the Board to waste valuable resources in a race against the co-pending proceedings.

1. Factor-1: Potential for Stay

This first factor clearly weighs against institution. The likelihood of a stay of the District Court lawsuit pending the conclusion of this proceeding is extremely low. Importantly, Judge Alan D. Albright, the presiding judge in the district court case, has *never* granted an opposed motion to stay pending an IPR. EX2019 (“Summary of J. Albright Orders on Opposed Motions to Stay”). He denied two such motions in June and one in July of 2020. Among the factors that Judge Albright has considered in denying motions to stay are the Court’s strong belief in the right to a jury trial enshrined in the Seventh Amendment, the amount of time the case has been pending, the fact that “[d]enying the stay would allow the Parties to obtain a more timely and complete resolution of infringement, invalidity, and damages issues,” and the fact that the plaintiff in the co-pending case opposes the stay. EX2017 (Minute Order, July 22, 2020, *Continental Intermodal Group—Trucking LLC v. Sand Revolution LLC, et al* (7-18-cv-00147 (Western District of Texas))).

Each of Judge Albright's factors weighs against a stay pending the resolution of the present IPR proceeding, should one be brought by Petitioner. The Court's reverence for the right to a jury trial under the Seventh Amendment is unlikely to wane before a motion to stay is filed in the co-pending proceeding. In addition, as discussed more fully below, while the case will have been pending for nearly a year at the time of the decision on institution in this proceeding, the claim construction briefing, hearing, and likely the ruling construing the claims will be complete and fact discovery will have begun.

Also of significance is the fact that four patents have been asserted in the co-pending proceeding, but only three patents have been challenged in IPRs during the eight months the case has been pending. Thus, in addition to the fact that, as Judge Albright notes, infringement, damages and certain challenges to validity cannot be decided by the Board, the Board will not have the opportunity to consider *in any way* one of the patents-in-suit in the district court. Thus, by definition, the IPRs, even if instituted, simply cannot resolve all of the issues presently pending before Judge Albright. Given his publicly stated hostility to stays in general, it is extremely unlikely that Judge Albright will grant a stay under these circumstances. *See, e.g.,* EX2020 (IAMS J. Albright Interview)

2. Factor-2: Timing of Trial

The final pretrial order in the co-pending district court case is due on December 16, 2021. Judge Albright has presided over one jury trial since taking the bench. That case, *MV3 Partners, LLC v. Roku*, went from filing to trial in 23.9 months, which included two delays, totaling four months, in response to concerns about COVID-19. EX2018 (Docket Navigator Time to Milestones Summary). In addition, while concerns with COVID-19 generally caused a short delay in Judge Albright's docket, his cases are now back on schedule, including scheduled jury trials. *See e.g.*, EX2003; EX2004. It therefore seems likely that this matter will go to trial in early 2022, likely before the two-year anniversary of the filing of the complaint in March 2020. In the event this IPR is instituted, the final determination is likely essentially to coincide with the trial in the district court. The final determination in the two later-filed IPRs on other patents-in-suit will occur after the trial in the district court.

Therefore, this factor weighs strongly in favor of discretionary denial of institution.

3. Factor-3: Litigation Investment

This factor weighs in favor of discretionary denial. The parties in the district court case have already exchanged preliminary infringement and invalidity contentions, and initial productions of documents. By the time the institution

decision is made, the parties will have briefed and argued claim construction and the Court will have prepared at least tentative constructions before the hearing, if not actually issued a final order. Fact discovery will be underway. Thus, considerable investment will have been expended in the litigation.

Moreover, given the likelihood that Judge Albright will deny a motion to stay, even if this IPR is instituted, there will have been substantial investment by the court (including discovery, expert discovery, dispositive motions, trial preparation, and very likely trial itself), before a final decision can be reached in this IPR, much less in the two later-filed proceedings.

This factor weighs strongly in favor of discretionary denial.

4. Factor-4: Overlap of Issues

The references cited in the Petition are all at issue in the joint defense group's invalidity contentions in the district court case. However, the defendants have asserted additional product based alleged prior art in the district court case, and they have generally claimed that they may have arguments for invalidity under 35 U.S.C. §§ 101 and 112. EX2021 ("Defendant's Preliminary Invalidity Contentions"). Also, as mentioned above, one of the four patents in the district court case has not yet been challenged in the PTAB. Thus, the issues currently before the Board cannot resolve all of the issues in the copending district court case. This factor weighs in favor of discretionary denial.

5. Factor-5: Petitioners Are Litigation Defendants

Mediatek is a defendant in the co-pending litigation.

6. Factor-6: Other Circumstances, Including the Merits

For at least the reasons set forth in this Preliminary Response, the petition lacks merit and that institution is properly denied on this basis as well.

IX. CONCLUSION

For at least the foregoing reasons, NTT respectfully requests that the Board deny institution of the Petition in its entirety.

Dated: November 20, 2020

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.8 and 42.6(e), the undersigned hereby certifies that the foregoing **Patent Owner's Response to Petition for *Inter Partes* Review Under 35 U.S.C. §§ 311-319 and 37 C.F.R. § 42.1 *et seq.*** was served electronically via e-mail to:

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CERTIFICATION UNDER 37 C.F.R. § 42.24

Under the provisions of 37 C.F.R. § 42.24, the undersigned hereby certifies that the word count for the foregoing Patent Owner Preliminary Response totals 11,109 words, which is less than the 14,000 allowed under 37 C.F.R. § 42.24(a)(1)(i), (b)(1).

Dated: November 20, 2020

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