

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 SURREPLY

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	GROUND 2 (SHPAK-LUNDBY) FAILS—NOTHING IN LUNDBY SUGGESTS PERMANENT “RESERVATION” OF A SECONDARY CHANNEL	1
	A. No “Channel Reservation” in Lundby	1
	B. Shpak-Lundby Cannot Supply What Both References Lack	5
	C. Petitioner’s Remaining Arguments Fail	6
III.	GROUND 3 (BUGEJA-HO) STILL FAILS	8
	A. Bugeja Lacks a “Mandatory Channel”	9
	B. Petitioners Remaining Arguments Fail	11
IV.	GROUND 1 (SHPAK-HO) STILL FAILS—THE BOARD’S CLAIM CONSTRUCTION IS CORRECT	13
	A. The Board’s and District Court’s Constructions Are Consistent	13
	B. Claims Allow One Channel to be <i>Used</i> —Not that Only One Was <i>Provided</i>	16
	C. The Specification Does <i>Not</i> Support a Single-Channel Interpretation	19
	D. The Specification Describes the Effect of Power Leakage on <i>Multichannel</i> Throughput	20
	E. “Indispensable” Suggests Others Are “Dispensable”	21
	F. Petitioner Misrepresents the European Prosecution, and Fails to Establish Relevance	21
	G. Ground 1 Fails For the Reasons The Board Previously Addressed	24
V.	GROUND 4 (THIELECKE) STILL FAILS	24
VI.	CONCLUSION	25

TABLE OF AUTHORITIES

<i>Altiris v. Symantec</i> , 318 F.3d 1363 (Fed. Cir. 2003)	16
<i>Anderson Corp. v. Fiber Composites, LLC</i> , 474 F.3d 1361 (Fed. Cir. 2007)	11
<i>Apple Inc. v. Motorola, Inc.</i> , 757 F.3d 1286 (Fed. Cir. 2014)	22, 23
<i>Caterpillar Tractor Co. v. Berco, S.P.A.</i> , 714 F.2d 1110 (Fed. Cir. 1983)	21, 22
<i>Pfizer, Inc. v. Ranbaxy Labs. Ltd.</i> , 457 F.3d 1284 (Fed.Cir.2006)	22

LIST OF EXHIBITS

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, Nov. 20, 2020
2006	Kin K. Leung, <i>Outdoor 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 .
2023	Joint Claim Construction Statement, C.A. No. 1:20-cv- 00583-ADA, -00632-ADA, -00769-ADA (WDTX), Jan. 28, 2021 (NOT FILED; PROVIDED DURING DEPOSITION)
2024	Deposition Transcript of Tim A. Williams, Ph.D., Vol. 1, Case No. IPR2020-01404, April 9, 2021 (" Williams1 ")
2025	Deposition Transcript of Tim A. Williams, Ph.D., Vol. 2, Case No. IPR2020-01404, April 15, 2021 (" Williams2 ")
2026	Declaration of James T. Geier, May19, 2021 (" Geier ")
2027	A. Nasipuri, J. Zhuang and S. R. Das, "A multichannel CSMA MAC protocol for multihop wireless networks," 1999 IEEE Wireless Communications and Networking Conference (1999), pp. 1402-1406 vol.3 ("Nasipuri")

Exhibit No.	Description
2028	Yang, S. C. <i>3G CDMA2000: Wireless System Engineering</i> (2004) (“Yang”)
2029	G. Giunta, “Basic note on Spread Spectrum CDMA signals,” Digital Signal Processing course, Third University of Rome, (May 2000) (“Giunta”)
2030	U.S. Patent No. 5,623,485 (“Bi”)
2031	Mishra, Arunesh, et al., <i>Exploiting Partially Overlapping Channels in Wireless Networks: Turning a Peril into an Advantage</i> , Proceedings of the 5th Conference on Internet Measurement (2005) (“Mishra”)
2032	U.S. Patent No. 7,539,162 (“Zhang”)

I. INTRODUCTION

Petitioner's Reply¹ only highlights the deficiencies in its arguments. In fact, more than once Petitioner resorts to *fabricating the support it needs*, having failed to find support in the references.

II. GROUND 2 (SHPAK-LUNDBY) FAILS—NOTHING IN LUNDBY SUGGESTS PERMANENT “RESERVATION” OF A SECONDARY CHANNEL

Petitioner contends that Shpak-Lundby can prevent transmission on an otherwise available channel because Lundby's “secondary channel **is reserved** for bandwidth augmentation,” and thus, since a code is “reserved” for use as a “secondary” channel, this channel is not used, even if idle, when a “primary” channel is unavailable. *See* Reply, 5.² However, *Petitioner cannot cite a single line from Lundby* that shows that a secondary channel is “reserved.” *See id.* In fact, Lundby suggests the opposite—that “primary” or “secondary” status is not reserved, but assigned dynamically based on availability. Without channel reservation, nothing prevents the system from moving to another idle channel after one is found unavailable, and Ground 2 collapses.

A. No “Channel Reservation” in Lundby

Petitioner attempts to overcome the fact that Lundby does not address the decision to transmit by claiming that use of a “secondary” channel is prevented,

¹ Paper 22.

² All emphases added unless stated otherwise.

because a “secondary channel **is reserved** for bandwidth augmentation.” *See* Reply, 5, 13-14. However, there is **no support** for this in Lundby, and Petitioner’s “support” does not include a *single* cite to Lundby. Even Dr. Williams’ declaration fails to include any cites to Lundby on this point. Lundby simply does not teach channel reservation. In his deposition, Dr. Williams agreed: Williams2, 18:4-13 (Q: “[D]oes Lundby teach or suggest any reason for—to prefer one of **these example codes over another?**” A: “Not that I recall, and it has nothing to do with my opinion in this case.”). Rather, Lundby *teaches against* permanent reservation, as “secondary” channel status is assigned dynamically based on availability: Specifically, Lundby checks a *pool* of Walsh codes at decision block 246 and assigns “secondary” status *after* this check. *See* Lundby, 4:64-67 (“This **check** is done because...**a code needs to be available to allocate to the secondary channel.**”). This step would be unnecessary if a secondary channel were always “reserved.”

Petitioner also argues that Lundby’s “secondary” channel would not be “secondary” if it could be used independently of the “primary” channel. Reply, 2. However, this argument turns on the erroneous presumption that “primary” and “secondary” status have already been assigned, which Lundby does not teach. *See* POR, 28, 35-36; Geier, ¶¶101, 112. The point is not that a “secondary” channel can be used independently of a “primary” channel, but rather that *any* available

code can be chosen as the “primary” channel based on *its own* status. Indeed, given that Lundby’s Fig. 2 *assumes* an available code is assigned “primary” status, the decision to transmit, and assignment of “primary” status, clearly occur before Lundby’s decision tree. *See e.g.*, POR, 25-28. Indeed, ***Lundby never teaches how a “primary” channel is assigned.*** *Id.* Rather, before Lundby enters Fig. 2, there is a pool of Walsh codes, some of which may be available. POR, 28. A POSA understands that any code channel can become a “primary” channel simply because it is available, consistent with typical CDMA system operation. *Id.*; *also* Geier, ¶101. This is also how Lundby assigns “secondary” status. *See* Lundby, 4:64-67.

Lundby provides ***no teaching*** that, when the decision to transmit is made, any codes are reserved for “primary” or “secondary” status, nor that any code cannot be assigned “primary” status. All that Lundby teaches is that a “primary” channel is a code channel that is available, and a “secondary” channel is one that may be added ***assuming an available channel has already been found.*** *See* POR, 25-28, 35-36. But, until “primary” status is assigned, no code is off-limits. Thus, a code designated “secondary” could later be assigned “primary” status if other codes are unavailable. *Id.*; *also* Geier, ¶¶101, 112. Lundby does not teach any mechanism, explicit or implicit, for preventing transmission when any code is available.

Petitioner claims that adding “channel reservation” to Lundby “ensures the secondary channel can provide *bandwidth-augmentation* whenever needed because it is *only used* to augment the primary channel’s bandwidth.” *See* Reply, 2 (emphasis in original). This argument fails. **First**, Lundby does not suggest any benefit from leaving an available channel unused. Indeed, the logical consequence of Petitioner’s “bandwidth-augmentation” theory is that there will be instances where no transmission will occur *even if there is an available channel*. This would be *less* efficient in terms of throughput. **Second**, Lundby *teaches against* Petitioner’s interpretation, because in Lundby transmission occurs on one channel if only one is available—indeed, per Petitioner, Lundby permits transmission on a “primary” channel *or* transmission on both “primary” and “secondary” channels. *See* Reply, 9. Thus, there is nothing so undesirable about using one channel that another code must be reserved to “ensure” availability of two channels. To the contrary, Lundby teaches that availability *must be checked* before a “secondary” channel can be added. *See* Lundby at 4:64-67. This check would be unnecessary if a “secondary” channel were always reserved.

Petitioner argues that NTT’s understanding, which allows a single channel to be used when it is available, is somehow less effective for “bandwidth-augmentation.” Reply, 7. This is incorrect. Under NTT’s interpretation, when

two codes are available, two channels can be used, just as in Petitioner's understanding. Lundby's purpose can be achieved without channel reservation.

Petitioner's assertion that NTT's analysis is "a design choice" is a smoke screen to hide gaps in Petitioner's own arguments. The fact remains that Petitioner cannot point to anything in Lundby—and by extension Shpak-Lundby—that *prevents transmission* based on the status of a channel. *See* POR, 32-37.

B. Shpak-Lundby Cannot Supply What Both References Lack

Petitioner asserts that the combination of Shpak-Lundby would prevent transmission, but fails to cite any support. *See* Reply, 10-11. Instead, Petitioner repeatedly cites its own Petition, and claims NTT's arguments pertain to a "hypothetical implementation." *Id.* However, nothing in either Shpak or Lundby teaches preventing transmission on an otherwise idle channel, so how could their combination do so? NTT is not putting forth an alternative implementation, but pointing out a gap in Petitioner's.

First, as discussed in §II(A), Lundby does not teach preventing transmission in multichannel systems based on the status of any one channel. Petitioner tries to avoid this with so-called "channel reservation," which does not appear anywhere in Lundby.

Petitioner cannot fill this gap with Shpak. Petitioner claims that Shpak's "common frequency channel" has a "special status." Reply, 8-9. However, as

Petitioner admits, Shpak is a *single-channel* system. *E.g.*, Petition (Paper 2, “Pet.”), 24. Claiming that Shpak’s “common frequency channel” is “special” when it is the only channel is nonsense. Shpak senses this channel before deciding to transmit, but Shpak does not prevent transmission on an idle channel in a *multichannel* system. Nor could Shpak suggest that the idle state of the “common frequency channel” be given priority in a multichannel system. Petitioner’s expert admitted that nothing in Shpak prevents sensing of an additional channel in Shpak-Lundby. *See* POR, 33-34; Williams2, 75:16-20.

Third, given that neither Shpak nor Lundby discloses any mechanism that can prevent transmission on otherwise idle channels, the combination cannot supply this element. The only “support” Petitioner points to is the “bandwidth augmentation” theory premised on nonexistent “channel reservation,” which fails for the reasons addressed in §II(A).

C. Petitioner’s Remaining Arguments Fail

First, Petitioner argues it is irrelevant that neither Shpak nor Lundby describes the power leakage problem identified in the ’551. Reply, 12. But NTT does not contend that the references must disclose the *same* problem as the ’551, but only that the references must disclose *some problem* that might lead a POSA to prevent transmission on otherwise idle channels based on the status of only one channel in a multichannel system. The only substitute Petitioner offers is the

nonexistent “channel reservation” in Lundby. §II(A),*supra.* Without power leakage, and without support for “channel reservation,” Petitioner is without *any* explanation or motivation for why a POSA would prevent transmission on an idle channel in Shpak-Lundby.

Second, in arguing that Shpak discloses multiple channels, Petitioner makes the same flawed argument it made pre-Institution—that simply because 14 channels may *in theory* be allowed at 2.4 GHz, Shpak’s single-channel system is somehow “multichannel.” *See* Reply at 15. This is wrong for the reasons addressed in §II(B)—while these channels may exist *in theory*, in reality they are not available to *any* device until two STAs mutually negotiate and agree to use them. *See also* Geier, ¶¶50, 66. Before Institution, the Board correctly concluded that Shpak does not describe multichannel systems. Paper 14 (“DI”), 23, 35.

Petitioner also points to Bugeja’s ¶27, which describes multichannel *APs* as putative support for multichannel systems in legacy 802.11, but this fails. First, Bugeja is not cited for Ground 2. Moreover, a multichannel AP is not a “multichannel system” and is thus irrelevant to the ’551. Rather, “throughput” in the ’551 refers to the throughput between pairs of STAs, and thus requires *both* an AP and client.³ Geier, ¶¶49, 54-55. Bugeja’s multichannel AP in ¶27 merely

³ Petitioner has not argued that a “multichannel system” does not include both a transmitting STA (an AP) and a receiving STA (a client), or that “throughput” in the ’551 refers to anything other than system throughput.

communicates with single-channel clients, and thus is used within the context of *single*-channel systems—thus possibly compatible with 802.11b. *See* Bugeja at ¶27. The only multichannel system described in Bugeja is the multichannel client of ¶46, which is *not* described as standards-compliant. Tellingly, despite pointing to the standards, Petitioner cites no support in any 802.11 standard existing as of the priority date.

Finally,⁴ Petitioner argues that Lundby’s failure to address the decision to transmit is irrelevant, because Shpak discloses it. Reply, 13-14. Once again, Petitioner suggests that a combination can magically supply an element missing from *both* references. Shpak *does not* address the decision to transmit in *multichannel systems* and thus cannot teach or suggest preventing transmission in a multichannel system based on one channel’s state.

III. GROUND 3 (BUGEJA-HO) STILL FAILS

Petitioner argues that “controlling system transmissions” refers to transmissions from an AP to a particular client, rather than to other clients. Reply, 15. This, Petitioner contends, is why it shouldn’t matter that Bugeja teaches secondary channels can be used when the primary channel is busy. *Id.* However, NTT did not make this argument. **First**, Petitioner ignores that Bugeja also

⁴ Petitioner also confusingly addresses an argument NTT did not make. Reply, 13. This nonexistent argument is not addressed here.

describes multichannel systems (the multichannel client of ¶46), wherein secondary channels can be used even when the primary channel is busy. *See* POR, 57-58. **Second**, Petitioner misstates NTT’s discussion of Bugeja’s single-channel clients. NTT did *not* say that a “mandatory channel” has to control transmissions to other clients, but instead that Bugeja’s single-channel clients show it treats STAs with a “mandatory channel” *exactly the same* as those without. *See* POR, 56-57, 60-61. This contradicts the language of Claims 2 and 6, and demonstrates why Petitioner’s “single-channel” construction of “mandatory channel” is wrong.

A. Bugeja Lacks a “Mandatory Channel”

Bugeja describes two types of systems—single-channel and multichannel. E.g., POR, 56-58. The logical implications of these systems’ function in Bugeja reveal Ground 3’s deficiencies.

First, in Bugeja’s multichannel system—the AP and the multichannel client of ¶46—the client can transmit on *any* of the primary or secondary channels, based on that channel’s *own* idle state. POR, 57-58. This clearly does not meet *any* construction of “mandatory channel”: Under Petitioner’s construction, Bugeja’s primary channel *is not* one that “is always used,” because Bugeja can use a secondary channel.⁵ *See* POR, 57-58. Under the Board’s preliminary construction,

⁵ Petitioner only addresses claim construction for Ground 1, but this makes no difference because Ground 3 fails for the other reasons addressed.

this primary channel is not one “over which transmission must occur before transmission over the other wireless channels,” because a secondary channel can be used before the primary channel. *See id.* This also fails to meet NTT’s proposed modification, because Bugeja’s primary channel is not one “whose idle state determines whether there can be a transmission over the other channels.” *See id.* Petitioner does not refute NTT’s points about Bugeja’s multichannel system. *See Reply*, 15-18.

Second, for Bugeja’s single-channel system, which is particularly relevant for claims 2 and 6, ***Petitioner concedes*** that the plain language of these claims requires transmission to STAs with a mandatory channel to be ***different*** from transmission to STAs without. *See e.g. Reply*, 16 (“[t]hese claims are explicit that while transmissions are made to STA A ‘only when the mandatory channel is idle,’ they are made to STA B ‘using [any] idle wireless channel(s)’.”) (brackets in original). Bugeja’s single-channel systems make no such distinction. For a single-channel client assigned Bugeja’s primary channel, transmission will occur when this channel is idle. *See POR*, 56-57, 60. For a single-channel client on a secondary channel, transmission will occur when this channel is idle. *Id.* This supports the Board’s conclusion that Bugeja does not distinguish between STAs with a “mandatory channel” from those without. *See DI* at 40-41.

Further, Petitioner’s interpretation of claims 2 and 6 proves that the Board’s multichannel construction of “mandatory channel” is correct. Indeed, the other challenged claims, including claim 1, use the phrase “transmitting...only when the mandatory channel is idle” to describe the operation of the “mandatory channel.” But, if the claimed “mandatory channel” can extend to single-channel systems, then this limitation would have *no meaning* because for single-channel systems, transmitting “only when the mandatory channel is idle” is *the same* as transmitting “using [any] idle wireless channel(s).” This is plainly wrong—the inventors would not have described operation of the “mandatory channel” if it only meant transmitting whenever a channel is idle. *See e.g., Anderson Corp. v. Fiber Composites, LLC*, 474 F.3d 1361, 1370 (Fed. Cir. 2007) (“different words or phrases” have different meaning). Here, Petitioner admits that the specification teaches that these phrases describe different ways of deciding when to transmit. *See Reply*, 16.

B. Petitioners Remaining Arguments Fail

First, Petitioner obscures whether Ground 3 relies on a single-channel or multichannel interpretation, by contending that Bugeja describes multichannel APs. *See Reply*, 17. However, for Ground 3 Petitioner explicitly relies on a single-channel system. *Pet.*, 58. Regardless, as discussed in §II(C), a multichannel **AP** is not a multichannel *system*. *See also Geier*, ¶¶ 50, 66. The Petitioner agrees.

See e.g., Pet., 55 (“Although Bugeja’s Figure 4 embodiment utilizes a multi-channel [AP] that can transmit simultaneously on three channels, **POSAs would have understood each to be a SISO channel.**”). But even if an AP by itself could be a “system,” Bugeja’s multichannel AP still lacks a “mandatory channel.” Indeed, Bugeja’s AP can use one of the secondary channels by itself, *without* using the primary channel (*e.g.*, when no transmissions are queued for an outer-region client).

Second, Petitioner argues that the combination confers “benefits” to reserving the primary channel to the outer region (Reply, 15), but the fact is that Bugeja *does not* limit the primary channel to outer-region clients. *See* POR, 57-58. Petitioner acknowledges that Bugeja-Ho encompasses both outer- and inner-region clients. Pet. at 57-58. Finally, *even if* Bugeja-Ho limited the primary channel to outer-region clients (it does not), transmission to these clients works the same way as to inner-region clients—“using [any] idle wireless channel(s)” —and thus not “only when the mandatory channel is idle.” *See* §III(A).

Third, Petitioner provides no intelligible explanation of why an inner-region client assigned only a secondary channel does not also have a “mandatory channel.” *See* Reply, 17-18. Petitioner refers generally to its argument that a “mandatory channel” needs to govern transmissions to a particular device, but for a single-channel client assigned a secondary channel, that is *precisely* what the

secondary channel does. Whether a multichannel client assigned two secondary channels is one permissible scenario does not change this. Bugeja permits single-channel clients in the inner-region (*see e.g.*, Fig. 4, ¶32), in which case, they can be considered an STA with a “mandatory channel” as Petitioner applies this term. Bugeja does not distinguish between different types of STAs, and does not transmit using the claimed “mandatory channel” to any STA.

Finally, in arguing that claims 2 and 6 “require nothing more” than “distinguishing an STA A from an STA B” in some unspecified way, Petitioner simply ignores two of three elements of the claims. *See* Reply, 18. The claims further require that *transmission* to these types of STAs function *differently*—“only when the mandatory channel is idle,” for STA A, and “using [any] wireless channel(s),” for STA B. Petitioner concedes this. *See* Reply, 16. It cannot now claim this distinction does not exist.

IV. GROUND 1 (SHPAK-HO) STILL FAILS—THE BOARD’S CLAIM CONSTRUCTION IS CORRECT

Petitioner’s defense of Ground 1 boils down to re-urging its single-channel claim construction, which the Board correctly rejected.

A. The Board’s and District Court’s Constructions Are Consistent

The Petitioner argues that the District Court’s construction of “mandatory channel” is “not similar” to the Board’s construction. Reply, 19-20. However,

short of pointing vaguely at the claim construction order itself and wide swaths of transcript, Petitioner cannot provide any actual supporting analysis. *See id.* The reason for this is clear: The Court did not offer *any* explanation of its construction in the order, or at the hearing. *See* EX1055, 1058. Nor, indeed, did the Court apply its construction to illustrate how it should be used, much less the conclusion to be reached on particular references like Shpak. Petitioner’s apparent suggestion that the Court addressed any issue currently before the Board is incorrect. Petitioner has not presented the Board anything more than what it had pre-institution, and the Board correctly concluded that its construction is similar to that of the Court’s.

For example, the Court’s construction includes language indicating that the “mandatory channel” is unlike other channels because its idle state controls transmissions—“determines whether there is transmission regardless of idle state of other channels.” *See* EX1055. This is consistent with the Board’s analysis that the “mandatory channel” must “control system transmissions.” *See* DI at 39. This function would not make sense in the context of a single-channel system. Further, to the extent the Court’s construction contemplates that the “mandatory channel” “may be the only channel,” this is consistent with the case wherein only a single channel is *used*. *See e.g.* ’551, cl. 1. The Court’s construction does not state that only one channel was provided *at the outset*. Similarly, the Board’s construction

states the “mandatory channel” is “*one channel* in a wireless multichannel system.”

Moreover, the Court did not indicate whether it considered the claim language surrounding the term “mandatory channel” as *independently* indicating a multichannel system. For example, the claims use different language (“**setting** a mandatory channel”) than used to describe channel negotiation in single-channel systems (“**determining** a channel in advance”). POR, 12-13. As the Board recognized, “setting a mandatory channel” “was pointed out as distinguishing over the prior art.” DI at 17.

Further, the surrounding claim language describing transmission “only when the mandatory channel is idle” differs from transmission to STAs without a set mandatory channel. As explained in §III(A), the distinction between these phrases disappears in the case of a single-channel system, as Bugeja illustrates. Thus, this language describes a multichannel system.

NTT believes that the Board’s construction of “mandatory channel” as “one channel in a multichannel system” is clearer and better for resolving the specific issues presented in this proceeding. The Board need not follow the precise phrasing adopted by another court.

B. Claims Allow One Channel to be *Used*—Not that Only One Was *Provided*

Petitioner argues, as it did pre-institution, that the claims include a single-channel system. These arguments are a rehash of arguments the Board rejected before institution. *See* DI at 16-18 (summarizing both sides' arguments).

Petitioner's arguments still fail.

First, Petitioner again argues a “mandatory channel” “is simply a ‘channel’ that is ‘mandatory,’” and that this justifies a single-channel system. *Compare* Reply, 20 *with* DI at 17-18 (summarizing same argument). However, this begs the question why a channel must be distinguished with the qualifier “mandatory” if it is the only channel provided at the outset. The same may be said of claim language indicating that the “mandatory channel” is “**always used** for transmission”—why would this language be in the claim, if there was never any option but to use the “mandatory channel”? As the Board stated “there is nothing ‘mandatory’ about a channel if it is merely the only channel provided.” DI at 20.

Petitioner cites, once again, to cases such as *Altiris v. Symantec*, 318 F.3d 1363 (Fed. Cir. 2003). *Compare* Reply, 20 *with* DI at 17. These cases are inapplicable here: in *Altiris*, the term at issue—“boot selection flag”—did sufficiently inform its own meaning, because the word “flag” invites modification with something to specify what is being “flagged.” *See* Paper No. 12, 4. The word

“channel,” by contrast, does not suggest that any modifier is missing, such that the meaning of “mandatory channel” does not require construction. *Id.*

Second, Petitioner once again claims the possibility that one channel might be *used* supports a single-channel system, and points specifically to MIMO as requiring only a single channel. *Compare* Reply, 20-21, with DI at 18 (summarizing same argument). But, as the Board recognized, “depending on the number of packets in the queue or whether the other channels are busy, only the ‘mandatory channel’ may need to be used at any given time and still be within the scope of the claims.” DI at 19. Thus, that MIMO only requires use of a single frequency channel *does not* mean the ’551 relates to single-channel systems. Similarly, the statements that Petitioner cites in the prosecution of a related European application (to the extent relevant)⁶ only emphasize the *use* of one channel, not that only one channel was provided at the outset. *See* EX1059, 130 (packets “can be transmitted...*using* a single wireless channel”).

Petitioner argues that the Board incorrectly found that MIMO did not use a single channel. Reply, 21. However, the Board did not disagree that a single channel may sometimes be *used* and still be within the claims, so this does not affect the Board’s conclusion. *See* DI at 19. *See also* §IV(C).

⁶ The irrelevance of the European application is discussed in §IV(E).

Third, Petitioner argues that Shpak describes “setting a mandatory channel” because the channel in Shpak’s single-channel system may be one of 14 theoretically possible 20 MHz channels in the 2.4 GHz band. Reply, 22. But, as discussed in §II(C), just because 14 channels may exist *in theory* does not mean they are actually part of any system, or accessible to any device. Petitioner again ignores that the ’551 specification describes channel negotiation in 802.11-1999 (which, like Shpak, describes single-channel systems using one of the theoretical 14) as “determining a channel in advance” rather than “setting a mandatory channel.” POR, 12-13.

Paradoxically, Petitioner admits that conflating “setting a mandatory channel” with channel negotiation, would render the claimed step “unnecessarily redundant” *if the claims included single-channel systems*. See Reply, 22-23. This is precisely NTT’s point. See POR, 13. Indeed, *every single embodiment* of the ’551 describes “setting a mandatory channel” in terms of selecting one channel *out of multiple channels already determined to be provided*. See POR, 14-15.

Whether an implementation may require an earlier channel negotiation step to identify the channels making up the multichannel system is immaterial—the basics of channel negotiation, such as in single-channel systems, is merely background art. See *id.* It makes sense to focus on what is new about the ’551: selecting one of multiple channels for special treatment.

Finally, Petitioner misreads claim 4. Claim 4 does not merely require transmitting using one method or other—rather, claim 4 is a dependent claim that *adds* the step of “selectively” using multiple wireless channels or MIMO. If all that claim 4 required was transmitting using one of multiple permissible methods, it would collapse into claim 1, which already describes this. Instead, claim 4 adds the element of “selecting” between two options—there can be no selection unless options are available. *See also* §V.

C. The Specification Does *Not* Support a Single-Channel Interpretation

Petitioner claims that the specification is not limited to multichannel embodiments, but it *still* cannot point to any embodiment that is a single-channel system. See Reply, 24-26. Rather, once again, Petitioner only points to indications that a single channel *may be used*. But the examples it cites are multichannel systems. For example, Fig. 8, refers to transmission using multiple wireless channels “as described in the first embodiment” or “simultaneous transmission using MIMO as described in the third embodiment.” ’551, 8:10-14. The first embodiment describes a multichannel system. POR, 14-15. The third embodiment is also a multichannel system—in fact, the specification states that the third embodiment merely uses “MIMO additionally for simultaneous transmission

of wireless packets in the first embodiment,” and that otherwise, “this embodiment is the same as the first embodiment.” ’551, 7:49-54.

**D. The Specification Describes the Effect of Power Leakage on
*Multichannel Throughput***

Petitioner’s argument that “power leakage” is not limited to multichannel systems misses the point—as discussed in the POR, the ’551 does not describe “power leakage” *in the abstract* as the problem. Rather, the ’551 teaches that the problem power leakage affecting the *throughput* of using *multiple wireless channels at the same time*. POR, 4-6, 14. Whether or not power leakage could also affect single-channel systems is not the ’551’s concern, because throughput in a single-channel system cannot be improved from the use of multiple channels simultaneously in the first place. Nor, indeed, can “setting a mandatory channel” address power leakage in single-channel systems, because simply labelling the only channel “mandatory” does not change its operation.

The flaw in Petitioner’s argument becomes clearer in its attempts to alter the ’551 specification. To make the case that the problem addressed by the ’551 can extend to single-channel systems, Petitioner goes so far as to *add text* to Fig. 15, to fabricate a single-channel scenario. *See Reply, 27. None of this text specifying distinct STAs appears in the specification.* To the contrary, the specification states that Fig. 15 illustrates a problem in multichannel systems: “In this situation,

throughput cannot be improved even if simultaneous transmission is performed *using multiple wireless channels at the same time.*” ’551, 2:48-51.

E. “Indispensable” Suggests Others Are “Dispensable”

Petitioner’s arguments about the prosecution of the ’551 still conflate the case of *using* one channel with *providing* one channel at the outset. *See* Reply, 28. That the applicant called the “mandatory channel” “indispensable” does not indicate a single-channel system either. To the contrary, like “mandatory,” “indispensable” indicates that, but for this qualifier, it would be possible to be “dispensable.” This only makes sense in the context of multichannel systems.

F. Petitioner Misrepresents the European Prosecution, and Fails to Establish Relevance

Petitioner’s reliance on statements made in the prosecution of a different application before the EPO fails:

First, Petitioner misstates the law on the relevance of foreign proceedings. The *Caterpillar* case *does not* set out a bright-line rule that foreign prosecutions “must be considered.” *See* Reply, 29. Indeed, the *Caterpillar* court recognized that “the varying legal and procedural requirements for obtaining patent protection in foreign countries might render consideration of certain types of representations inappropriate,” and that analysis and comparison of applicable foreign laws is required to determine relevance. *See Caterpillar Tractor Co. v. Berco, S.P.A.*, 714

F.2d 1110, 1116 (Fed. Cir. 1983). Indeed, the *Caterpillar* court **affirmed** the district court’s decision ***not to credit foreign statements*** surrendering equivalents and the court’s finding of infringement under the doctrine of equivalents. *Id.* The *Apple* case similarly holds statements in foreign prosecution are relevant if “***not related to unique aspects of foreign patent law.***” *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1312–13 (Fed. Cir. 2014). By contrast, statements relating to patentability requirements unique to foreign law, are irrelevant. *See id.*, citing *Pfizer, Inc. v. Ranbaxy Labs. Ltd.*, 457 F.3d 1284, 1290 (Fed.Cir.2006) (“[S]tatements made during prosecution of foreign counterparts ... are **irrelevant ... because they were made in response to patentability requirements unique to [foreign] law.**”).

Here, the statements Petitioner relies on relate to patentability requirements unique to foreign law. Specifically, they relate to whether the then-pending claims satisfied the clarity guidelines of Article 84 of the EPC. EX1059, 171, 180. These are **not** statements made to distinguish claim scope from prior art—that is addressed in a different section entirely. *See id.* at 180 (different sections for “clarity” and “patentability”). Moreover, review of Article 84 (*see* EX1059, 123-125) reveals that the standards applied (*e.g.*, “undue burden” in claim interpretation, “essentiality” of certain features, “vagueness” and “doubt” in the reader) find no exact counterpart in U.S. law. Petitioner makes ***no attempt*** to

compare Article 84 to any U.S. law, nor to explain why the patentability requirements of Article 84 are the same as in the U.S. The statements are not relevant.

Second, Petitioner mischaracterizes the European proceedings. The applicant never stated that the claims encompassed a case with only one channel “being present.” Reply, 23, *citing* EX1059 at 130. Petitioner had to *add this text* to support its argument. In fact, the applicant emphasized that “the present invention” is intended to “avoid leakage power from affecting *an adjacent channel* so as to *improve throughput by simultaneous transmission*”—which, as discussed in §IV(D), only affects *multichannel systems*. See EX1059 at 129. Although the *examiner* at one point alluded to a case where “only one channel is present” (Reply, 30, *citing* EX1059 at 125), *the applicant* never agreed. This is in stark contrast to Petitioner’s cases, describing “blatant admissions” by an applicant. See *e.g., Apple*, 757 F.3d 1312–13.

Finally, to the extent the Petitioner wishes the Board to draw conclusions relating to amendments made to the European claims, these amendments relate to *the clarity standards* under Article 84 of the EPC, rather than scope of the invention. See EX1059 at 180. As discussed above, Petitioner has failed to establish that the clarity standards of Article 84 are not unique to foreign law, and failed to explain how responsive amendments relate to the scope of the ’551. The

fact that these amendments were meant to *clarify* what the applicant was already trying to cover, not to overcome prior art, shows the applicant believed the specification pertains to multichannel systems.

G. Ground 1 Fails For the Reasons The Board Previously Addressed

Petitioner’s proposed construction of “mandatory channel” is incorrect.

Ground 1 still fails for the reasons addressed in the POR.

V. GROUND 4 (THIELECKE) STILL FAILS

Petitioner argues that claims 4 and 8, which require “*selectively* using the multiple wireless channels or the MIMO,” do not require *selection* between multiple wireless channels or MIMO. *See* Reply, 31-32. This is incorrect.

First, as a matter of common sense, there can be no “selection” without a choice. However, Petitioner argues that even where use of “multiple wireless channels” was never an available choice, there can be “selective” use of MIMO. That is not what the word “select” means. Moreover, according to Petitioner, the preamble (which the Board found limiting) *already* states that transmission can occur using multiple wireless channels or using a single channel that is MIMO. *See* Pet., 27. Petitioner’s interpretation of claims 4 and 8 is redundant with the preamble. Rather, the plain language requires “selectively” using one or the other based on channel conditions—unambiguously indicating that *a choice* is being made between options that are actually available. But, as

Petitioner admits, the use of multiple wireless channels is not even an option in single-channel systems such as Shpak-Ho-Thielecke and Bugeja-Ho-Thielecke. *See* Pet., 24, 55-56.

Second, Petitioner mischaracterizes the Board's statement regarding Lundby. The Board merely pointed out that one could demonstrate invalidity using one of two multiple-dependent scenarios. *See* DI at 31. Moreover, this statement related to the Board's conclusions with respect to **Ground 2**, not Ground 4. The Board did not make any such finding with respect to Ground 4, which does not rely on Lundby. *See* DI at 41. To the extent that the Board's statement with respect to Lundby (Ground 2) relies on a mistaken assumption that MIMO involves the use of multiple channels, Petitioner now refutes that statement. Reply, 21. To the extent the Board wishes to revisit claim 4 with respect to Ground 2, it can now do so with the understanding that *there is no dispute* that changing the number of channels does not disclose using MIMO or not, and that changing the number of MIMO streams does not involve using multiple channels. Thus, Shpak-Lundby cannot disclose selectively using multiple wireless channels or MIMO because these references, alone or in combination, fail to disclose the ability to select MIMO.

VI. CONCLUSION

NTT requests the Board to reject Petitioner's Grounds.

Dated: September 16, 2021

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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 Surreply** 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's Surreply totals 5,497 words, which is less than the 5,600 allowed under 37 C.F.R. § 42.24(a)(1)(i), (b)(1).

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