

Filed on behalf of Petitioners by:

Paper No. ____

Richard F. Giunta, Reg. No. 36,149
Gregory S. Nieberg, Reg. No. 57,063
Nathan R. Speed, admitted *pro hac vice*
WOLF, GREENFIELD & SACKS, P.C.
600 Atlantic Avenue
Boston, MA 02210
(617) 646-8000 Phone
(617) 646-8646 Fax

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 No. IPR2020-01404
Patent No. 7,280,551

PETITIONERS' REPLY TO PATENT OWNER'S RESPONSE

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	GROUND 2: SHPAK-LUNDBY	1
	A. A Different Implementation Being Possible Does Not Defeat Obviousness Based On Petitioners’ Implementation	1
	1. NTT Attacks an Implementation Petitioners Did Not Advance	1
	2. Petitioners’ Implementation Is Consistent with Shpak and Lundby.....	8
	B. NTT’s Missing Limitation Arguments Fail	10
	C. Individual Critiques of Lundby and Shpak Are Irrelevant.....	11
	1. “Leakage Power” Is Irrelevant	12
	2. NTT’s Assertion That Shpak Does Not Disclose Multiple Channels Is Wrong and Irrelevant.....	12
	3. NTT Dropped Its POPR Argument That Lundby’s Code Channel Teachings Were Irrelevant to Shpak’s Frequency Channel System.....	13
	4. Lundby Purportedly Not Addressing a Decision to Transmit is Irrelevant	13
III.	GROUND 3: BUGEJA-HO.....	15
	A. “Mandatory Channel” Only Controls Transmissions to a Particular Client, Not All System Transmissions	15
	B. NTT’s Additional Arguments Fail	17
IV.	GROUND 1: SHPAK-HO.....	18
	A. Claim Construction.....	19
	1. Legal Standard.....	19
	2. Court’s Construction	19
	3. The Claims Are Not Limited to Multichannel Systems.....	20
	4. Specification Supports Petitioners’ Construction	24
	5. NTT’s Reliance on Power Leakage Fails.....	26
	6. Prosecution History	28

7. NTT’s European Admissions	29
B. NTT Loses Under Petitioners’ Construction.....	31
C. Petitioners Also Win Under the Board’s and NTT’s Constructions	31
V. GROUND 4	31
VI. MULTIPLE DEPENDENTS.....	32
VII. CONCLUSION.....	32

TABLE OF AUTHORITIES

CASES

<i>ACTV v. Walt Disney</i> , 346 F.3d 1082 (Fed. Cir. 2003)	20
<i>Alcon Rsch v. Apotex</i> , 687 F.3d 1362 (Fed. Cir. 2012)	12
<i>Altiris v. Symantec</i> , 318 F.3d 1363 (Fed. Cir. 2003)	20
<i>Apple v. Motorola</i> , 757 F.3d 1286 (Fed. Cir. 2014)	29
<i>Bradium Techs. v. Iancu</i> , 923 F.3d 1032 (Fed. Cir. 2019)	11
<i>Caterpillar Tractor v. Barco, S.P.A.</i> , 714 F.2d 1110 (Fed. Cir. 1983)	29
<i>Dow Chem. v. Mee Indus.</i> , 341 F.3d 1370 (Fed. Cir. 2003)	32
<i>Dukane Corp. v. Herrmann Ultrascalltechnick</i> , IPR2016-00066, Paper 15 (Apr. 26, 2017)	32
<i>Enzo Biochem v. Applera</i> , 599 F.3d 1325 (Fed. Cir. 2010)	31
<i>Idemitsu Kosan v. SFC</i> , 870 F.3d 1376 (Fed. Cir. 2017)	29
<i>In re Fulton</i> , 391 F. 3d 1195 (Fed. Cir. 2004)	8
<i>In re Rambus</i> , 694 F.3d 42 (Fed. Cir. 2012)	26
<i>Liebel-Flarsheim v. Medrad</i> , 358 F.3d 898 (Fed. Cir. 2004)	26

<i>Northrop Grumman v. Intel</i> , 325 F.3d 1346 (Fed. Cir. 2003)	26
<i>Raytheon v. Roper</i> , 724 F.2d 951 (Fed. Cir. 1983)	26
<i>Tesla v. Nikola</i> , IPR2019-01646, Paper 7 (Mar. 27, 2020)	8, 32
REGULATIONS	
37 C.F.R. §42.23(b)	30

LISTING OF EXHIBITS

Exhibit	Description
1001	U.S. Patent No. 7,280,551 (“the ’551 Patent”)
1002	File History for U.S. Patent No. 7,280,551 (“the ’551 FH”)
1003	Declaration of Tim A. Williams (“Williams-Decl.”)
1004	Curriculum Vitae of Tim A. Williams
1005	U.S. Patent Appl. Pub. No. 2003/0206532 A1 (“Shpak”)
1006	U.S. Patent Appl. Pub. No. 2003/0169769 A1 (“Ho”)
1007	U.S. Patent Appl. Pub. No. 2003/0220112 A1 (“Bugeja”)
1008	U.S. Patent No. 6,560,292 (“Lundby”)
1009	U.S. Patent Appl. Pub. No. 2002/0159431 A1 (“Moulsley”)
1010	U.S. Patent No. 6,591,107 (“Sonetaka”)
1011	<i>Nippon Telegraph & Telephone Corp. v. MediaTek Inc.</i> , 6:20-cv-225-ADA (W.D. Tex.), Dkt. No. 1 (Complaint)
1012	<i>Nippon Telegraph & Telephone Corp. v. MediaTek Inc.</i> , 6:20-cv-225-ADA (W.D. Tex.), Dkt. No. 15 (Joint Motion to Extend Answer and Waiver of Service)
1013	<i>Nippon Telegraph & Telephone Corp. v. MediaTek Inc.</i> , 6:20-cv-225-ADA (W.D. Tex.), Dkt. No. 25 (Order Governing Proceedings – Patent Case)
1014	U.S. Patent Appl. Pub. No. 2003/0086437 A1
1015	U.S. Patent Appl. Pub. No. 2003/0171115 A1
1016	U.S. Patent Appl. Pub. No. 2003/0222818 A1

1017	U.S. Patent No. 7,215,928
1018	U.S. Patent No. 6,987,819
1019	U.S. Patent Appl. Pub. No. 2002/0193146 A1
1020	U.S. Patent No. 7,224,704
1021	U.S. Patent No. 6,426,723
1022	U.S. Patent No. 7,317,770
1023	U.S. Patent No. 6,862,271
1024	U.S. Patent No. 6,941,110
1025	U.S. Patent No. 7,106,715
1026	U.S. Patent No. 7,408,907
1027	U.S. Patent No. 7,301,924
1028	U.S. Patent No. 7,039,412
1029	Certified Translation of Kurosaki et al., “100Mbit/s SDM-COFDM over MIMO Channel for Broadband Mobile Communications,” Technical Reports of the Institute of Electronics, Information and Communication Engineers, AP 2001-96, RCS2001-135 (2001-10).
1030	U.S. Patent No. 6,895,443
1031	U.S. Patent No. 7,006,451
1032	U.S. Patent No. 7,020,110
1033	U.S. Patent No. 7,031,249
1034	U.S. Patent No. 7,076,263
1035	U.S. Patent Appl. Pub. No. 2003/0003863 A1

1036	U.S. Patent No. 7,133,677
1037	U.S. Patent No. 7,321,762
1038	U.S. Patent No. 7,352,718
1039	U.S. Patent No. 7,421,046
1040	U.S. Patent No. 7,570,929
1041	U.S. Patent No. 7,586,884
1042	U.S. Patent Appl. Pub. No. 2002/0022483 A1
1043	U.S. Patent Appl. Pub. No. 2002/0078235 A1
1044	U.S. Patent No. 7,092,374
1045	Order Regarding Court Operation Under the Exigent Circumstances Created by the COVID-19 Pandemic (C.J. Garcia) (Mar. 13, 2020)
1046	Supplemental Order Regarding Court Operation Under the Exigent Circumstances Created by the COVID-19 Pandemic (C.J. Garcia) (Apr. 15, 2020)
1047	Supplemental Order Regarding Court Operation Under the Exigent Circumstances Created by the COVID-19 Pandemic (C.J. Garcia) (May 8, 2020)
1048	Supplemental Order Regarding Court Operation Under the Exigent Circumstances Created by the COVID-19 Pandemic (C.J. Garcia) (June 18, 2020)
1049	Supplemental Order Regarding Court Operation Under the Exigent Circumstances Created by the COVID-19 Pandemic (C.J. Garcia) (July 2, 2020)
1050	U.S. Patent No. 6,411,608

1051	Internet Archive WayBack Machine, March 24, 2000, https://web.archive.org/web/20000324233339/http://standards.ieee.org/catalog/IEEE802.11.html
1052	Plaintiffs’ Preliminary Infringement Contentions
1053	E-Mail from Judge Albright’s Patent Clerk Regarding Case Management Conference
1054	Declaration of Nathan R. Speed in Support of Motion for Admission <i>Pro Hac Vice</i>
1055	<i>Nippon Telegraph & Telephone Corp. et al. v. Texas Instruments Inc.</i> , 1:20-cv-583-ADA (W.D. Tex.), Dkt. No. 48 (Claim Construction Order)
1056	<i>Nippon Telegraph & Telephone Corp. et al. v. Texas Instruments Inc.</i> , 1:20-cv-632-ADA (W.D. Tex.), Dkt. No. 37 (Plaintiffs’ Opening Claim Construction Brief)
1057	<i>Nippon Telegraph & Telephone Corp. et al. v. Texas Instruments Inc.</i> , 1:20-cv-632-ADA (W.D. Tex.), Dkt. No. 48 (Plaintiffs’ Reply Claim Construction Brief)
1058	<i>Nippon Telegraph & Telephone Corp. et al. v. Texas Instruments Inc.</i> , 1:20-cv-583-ADA (W.D. Tex.) (Transcript of February 4, 2021 Markman Hearing)
1059	Prosecution History for European Patent No. 1,667,480 B1
1060	European Patent No. 1,667,480 B1
1061	Deposition Transcript of James T. Geier (July 29, 2021) (“Geier-Depo.”)
1062	Reply Declaration of Tim A. Williams (“Williams-Reply”)

I. INTRODUCTION

The Board’s preliminary determination that Shpak-Lundby (Ground 2) renders claims 1, 3-5, and 7-8 obvious should be confirmed. Paper 14 (“DI”), 29-33. In its POR, Patent Owner (“NTT”) improperly attacks Lundby and Shpak in isolation, and improperly attacks an irrelevant hypothetical *alternate* way of combining their teachings that differs materially from the Petition’s combination.¹ NTT cannot refute that the combination *the Petition proposed* renders the claims obvious.

The Board’s preliminary determination that neither Bugeja-Ho (Ground 3) nor Shpak-Ho (Ground 1) renders their challenged claims obvious was premised on narrow claim interpretations that cannot stand on the fully-developed record.

II. GROUND 2: SHPAK-LUNDBY

A. A Different Implementation Being Possible Does Not Defeat Obviousness Based On Petitioners’ Implementation

1. NTT Attacks an Implementation Petitioners Did Not Advance

The Petition established Lundby would have motivated POSAs to add a second channel to Shpak’s primary channel “to *augment the primary channel’s bandwidth.*” Petition, 41-42; Williams-Decl., ¶¶125-126. NTT agrees POSAs had reasons to add a second channel to Shpak. POR, 40-41 (Petition provided “reason[s]

¹ Emphasis added throughout unless indicated.

to use two channels instead of one”). NTT only argues POSAs would have implemented Shpak-Lundby’s multichannel system *differently* than Petitioners proposed by using the secondary channel for a *different* purpose.

NTT alleges POSAs would have used the “secondary” channel *not* as a channel *secondary* to the primary channel, but as an independent channel used even when the primary channel is busy. POR, 32-37. NTT’s implementation would not have primary and *secondary* channels as Lundby proposes²—it would have two co-equal channels used independently. POR, 36.

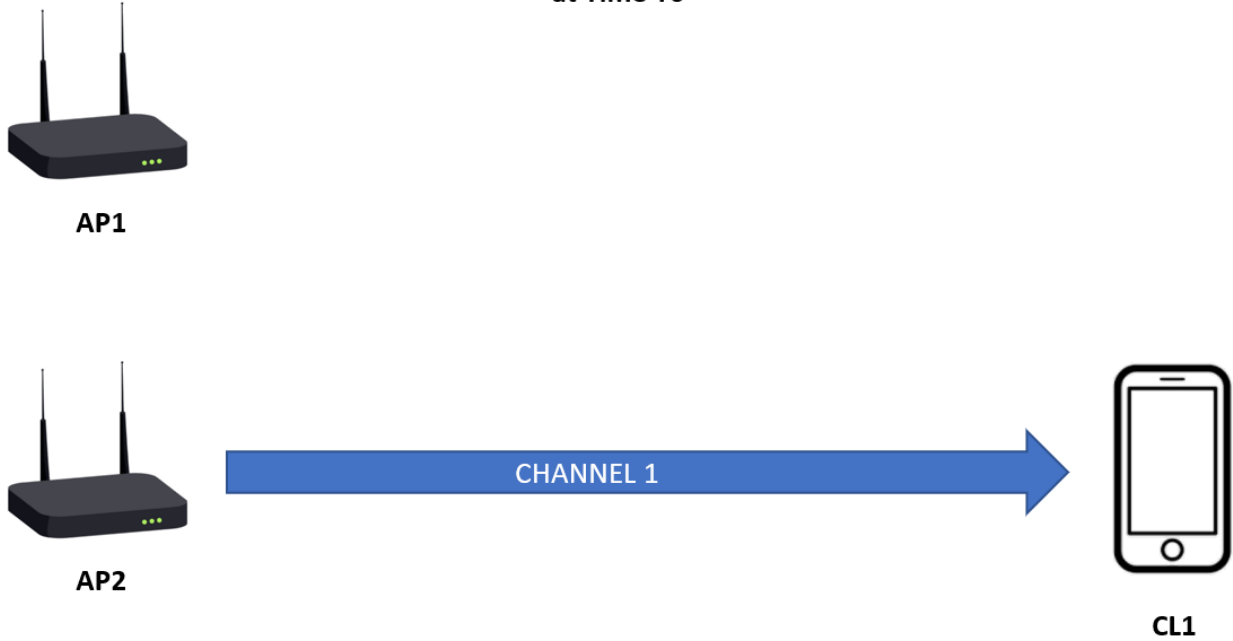
NTT says its alternative independent-channel implementation was the “default” implementation POSAs would have pursued (POR, 33), and argues Petitioners “failed to allege any *reason* why a POSA would deviate from” that implementation (POR, 3). Nonsense. Petitioners cited Lundby’s teachings providing just such a “reason”—“to augment the primary channel’s bandwidth [with the secondary channel] such that wireless packets are transmitted on both channels simultaneously.” Petition, 41-42. The Petition’s implementation ensures the secondary channel can provide *bandwidth-augmentation* whenever needed because it is *only used* to augment the primary channel’s bandwidth. Petition, 41-44, 46-47

² Lundy also calls the channels “fundamental” and “supplemental,” respectively. Lundy, 14:12-32.

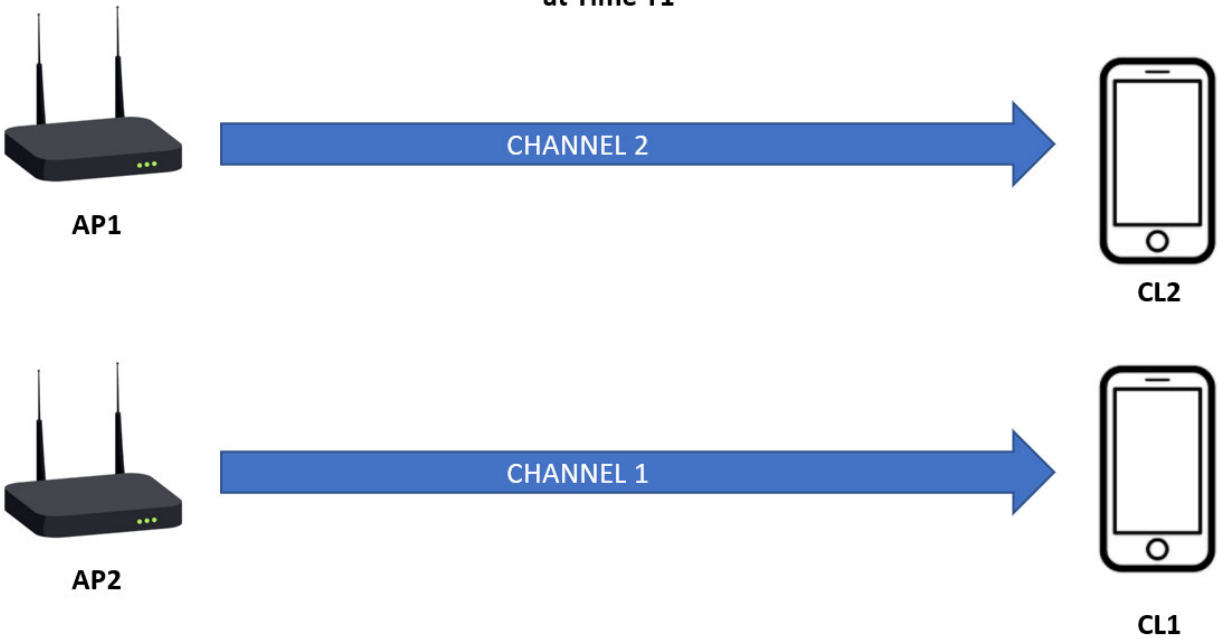
(citing Williams-Decl., ¶¶125-131, 133, 140-141). NTT’s “default” implementation does not prioritize bandwidth augmentation—it prioritizes channel independence. POR, 38.

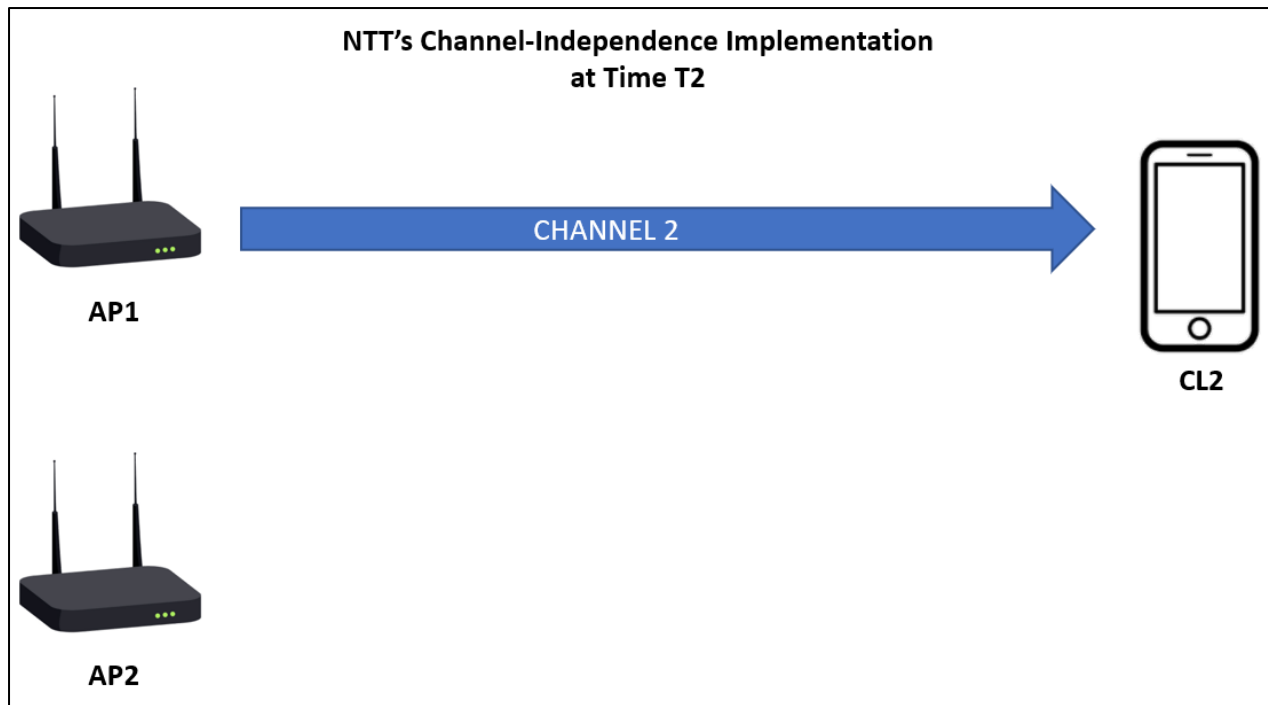
Differences between the implementations are illustrated below for an access point “AP1.” With *NTT’s channel-independence* implementation, when CHANNEL-1 is unavailable (because AP2 is using it to service client CL1), AP1 uses CHANNEL-2 independently to service CL2 at time T1. CL1 and CL2 are serviced simultaneously but neither receives augmented bandwidth because no channel was reserved for that purpose. Williams-Reply, ¶¶52-58. When CHANNEL-1 becomes free at time T2, AP1 cannot use it to augment bandwidth for the rest of the transmission with CL2, and CHANNEL-1 becomes a contested channel for which all stations compete. Williams-Reply, ¶¶58-60.

**NTT's Channel-Independence Implementation
at Time T0**

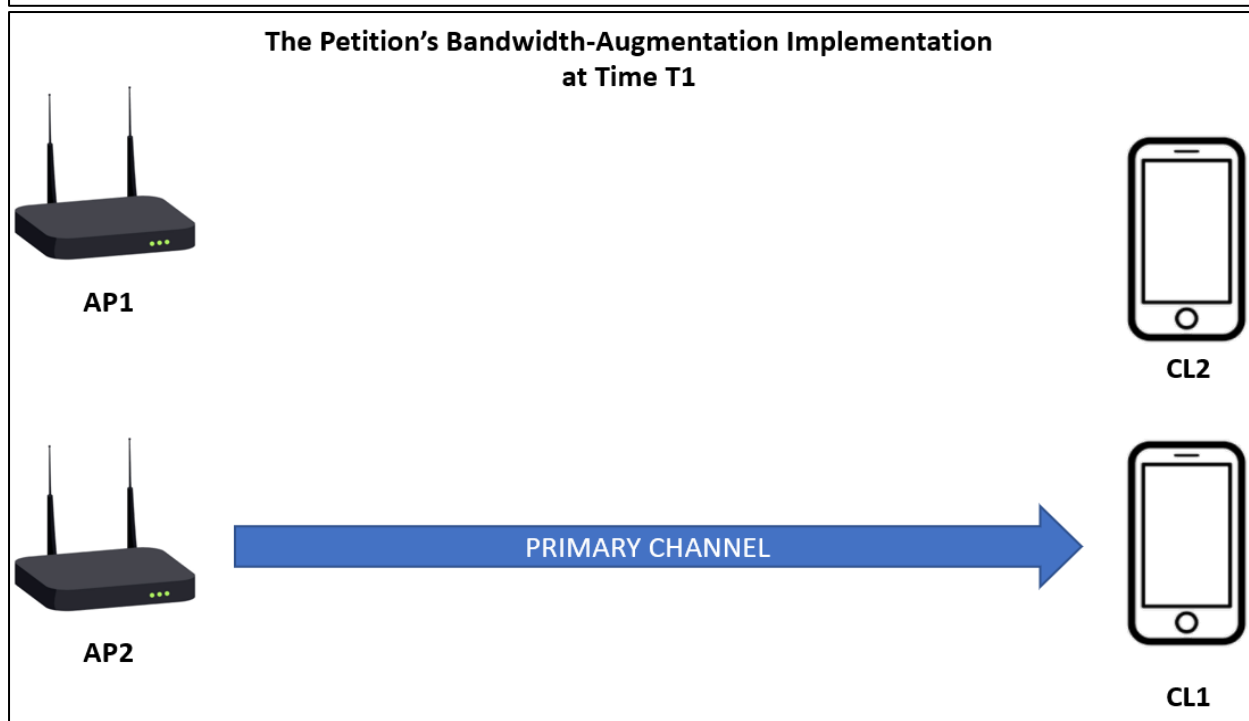
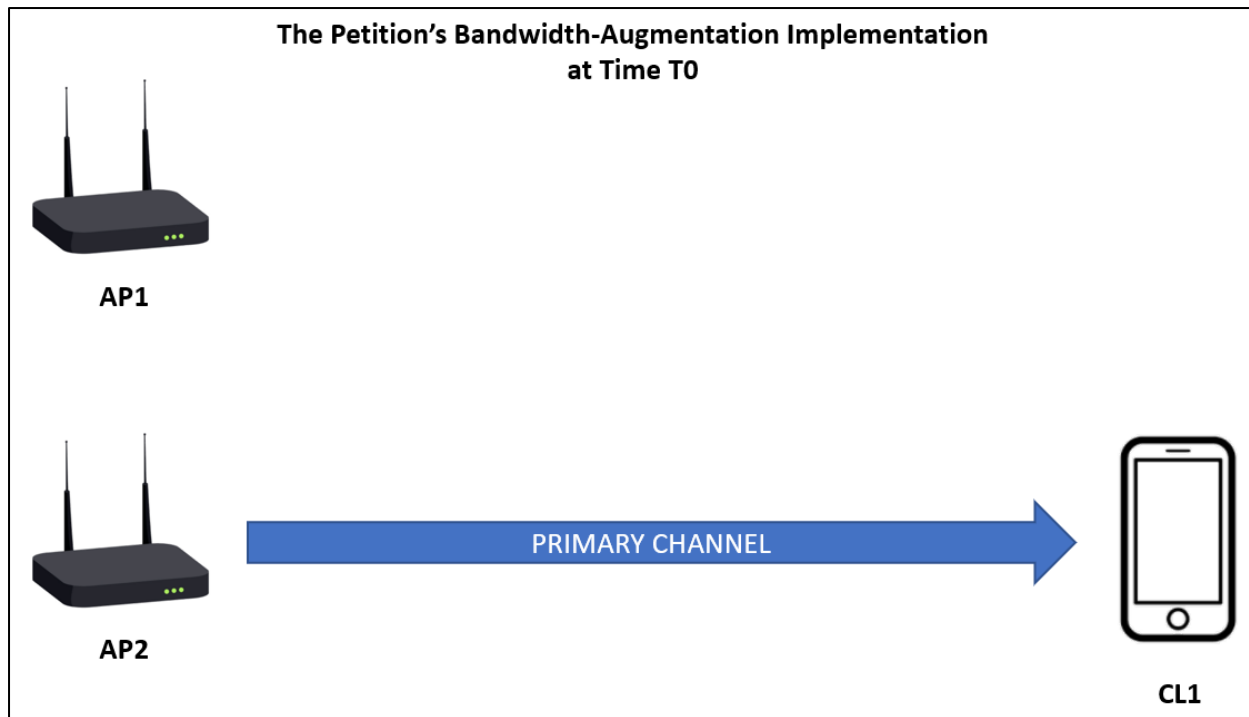


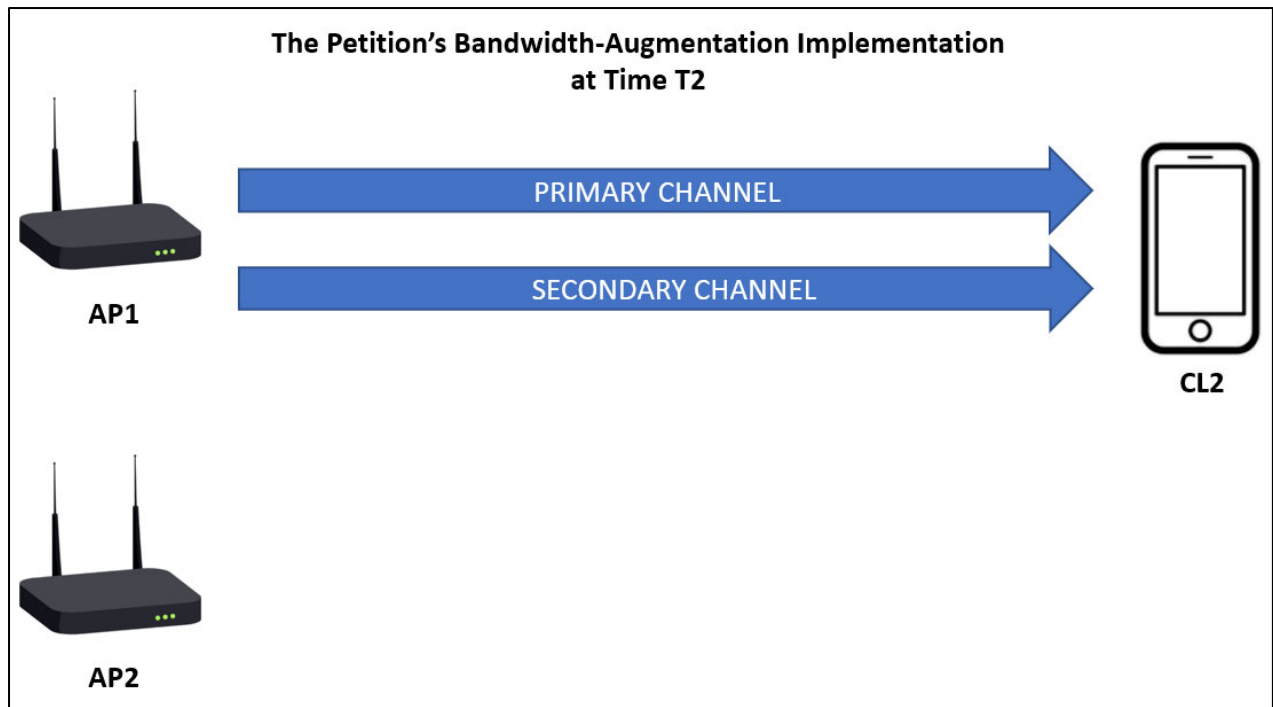
**NTT's Channel-Independence Implementation
at Time T1**





With *Petitioners' bandwidth-augmentation* implementation, because the primary channel is unavailable—AP2 is using it to service CL1—when CL2 arrives at T1, CL2 is *not* immediately serviced because the secondary channel is reserved for bandwidth augmentation. Petition, 42; Williams-Decl., ¶126; Williams-Reply, ¶¶61-63. Once the primary channel becomes available at T2, AP1 uses it to connect to CL2 *and* augments bandwidth by using the primary and secondary channels together. Petition, 42; Williams-Decl., ¶126; Williams-Reply, ¶¶63-64. Petitioners' bandwidth-augmentation implementation—unlike NTT's—reserves additional bandwidth for CL2, which is advantageous for data-intensive operations like streaming video. Petition, 42; Williams-Decl., ¶126; Williams-Reply, ¶64.





NTT's channel-independence implementation is *less effective* at bandwidth augmentation than Petitioners' implementation because no channel is reserved, and thus situations may arise where no channel is available to augment the bandwidth of another channel's connection. Williams-Reply, ¶65; Bujega, [0037], [0046]. NTT's expert agreed Petitioners' implementation augments bandwidth (Geier-Depo., 171:23-172:13, 192:17-193:8), and that bandwidth augmentation was beneficial (*id.*, 175:2-17, 187:19-188:10).

NTT agrees increased transmission speed would have motivated POSAs "to use two channels instead of one," but alleges it would have lead POSAs to NTT's channel-independence implementation, not Petitioners' bandwidth-augmentation implementation. POR, 40. NTT's only support is "Geier at ¶119," which "simply

repeats the [POR's] conclusions” and “is entitled to little or no weight.” *Tesla v. Nikola*, IPR2019-01646, Paper 7, 19 (Mar. 27, 2020). NTT cites no credible evidence refuting that POSAs would have implemented Shpak-Lundby to augment bandwidth.

NTT's unsupported argument also disregards Lundby's express teachings (*e.g.*, FIG. 2) and ignores that the Petition's motivation was to “allow[] for nearly ***doubling the speed of a particular AP-client communication*** in Shpak.” Petition, 42. NTT cannot dispute that reserving the secondary channel to augment bandwidth benefits data-intensive operations for a particular AP-to-client communication session.

Identifying a different design choice POSAs might have implemented does not render Ground 2's implementation non-obvious. *In re Fulton*, 391 F. 3d 1195, 1201-02 (Fed. Cir. 2004). Petitioners provided reasons why POSAs would have pursued the bandwidth-augmentation implementation, and NTT's contrary assertion (POR, 3) is demonstrably wrong. Petition, 41-42; Williams-Decl., ¶¶125-126.

2. Petitioners' Implementation Is Consistent with Shpak and Lundby

Shpak's APs arbitrate to ensure only one responds to a device on the “common frequency channel.” Shpak, [0010]-[0016], [0037]-[0043]. This ensures the “common frequency channel” is always idle for the “winning” AP—no AP uses the “common frequency channel” unless it is the “winning” AP. Shpak, [0042]-[0043].

Shpak’s “common frequency channel” therefore has special status—it’s the channel used for transmissions between “winning” APs and devices.

As NTT concedes, Lundby “*only* illustrates two outcomes—transmitting on the primary channel or on both the primary and secondary channels.” POR, 26 (emphasis original); DI, 30 (interpreting Lundby similarly). As the Petition explained: “That Lundby does not disclose using *only* the secondary channel underscores that the primary channel is *always* used for transmission.” Petition, 46 (emphasis original).

Lundby never uses its secondary channel independently of the primary channel, and Shpak’s APs never transmit when they do not “win” the “common frequency channel.” Thus, NTT’s assertion that POSAs *following the teachings of Shpak and Lundby* would have implemented a system in which APs transmit on a different channel when they do not “win” the “common frequency channel” is inconsistent with Shpak *and* Lundby.

B. NTT's Missing Limitation Arguments Fail

NTT alleges Shpak-Lundby fails to disclose (1) a “mandatory channel” and/or (2) “transmitting...only when the mandatory channel is idle” because the combination purportedly does not prevent APs from transmitting over an idle secondary channel when the “common frequency channel” is busy. POR, 41-47. NTT’s arguments attack NTT’s channel-independence-implementation, *not the bandwidth-augmentation-implementation the Petition advanced*. NTT cannot refute the *Petition’s* combination meets every limitation.

The Petition said “Shpak-Lundby’s AP would have *always* sent packet transmissions using the primary (mandatory) channel [Shpak’s common frequency channel], alone or in combination with Shpak-Lundby’s secondary channel.” Petition, 47. “[I]f the primary (mandatory) channel was not idle, Shpak-Lundby’s AP *would not transmit data on any channel until the primary channel became idle.*” *Id.* As discussed *supra* §II.A.2, Petitioners’ implementation is wholly consistent with Lundby’s Figure 2, which always uses the primary channel, and never uses the secondary channel alone. Petition, 47.

Shpak-Lundby’s AP (using carrier sense) determines if the “common frequency channel” is *busy* and—if so—waits for it to become idle. Petition, 45-47; Williams-Decl., ¶¶138-141. Only when it is *idle* does Shpak-Lundby’s AP proceed to Lundby’s Figure 2 method to determine whether it is beneficial to use the common

frequency channel together with a secondary channel. Petition, 45-47; Williams-Decl., ¶¶138-141. If so, the AP uses both; if not, it uses only the “common frequency channel.” Petition, 47; Williams-Decl., ¶¶140-141. At deposition, Dr. Williams consistently described Shpak-Lundby’s APs as operating in this manner. EX2025 (“Williams2”), 27:10-21, 44:7-23, 45:7-47:24, 49:11-51:23, 54:25-56:15, 64:3-67:5, 68:2-69:11, 76:9-77:9, 80:22-81:1.

Shpak-Lundby’s “common frequency channel” is a “mandatory channel” under (1) Petitioners’ plain-meaning construction because it is “always used for transmission” (*infra* §IV.A), (2) the Board’s construction because “transmission must occur [over it] before transmission may occur over the other wireless channels” (DI, 21), and (3) NTT’s construction because its “idle state determines whether there can be a transmission over the other channels,” (POR, 11-12).

NTT’s missing-limitation arguments fail because they ignore the Petition’s combination and attack a hypothetical combination Petitioners did not advance.

C. Individual Critiques of Lundby and Shpak Are Irrelevant

Obviousness cannot be “overcome” by attacking references in isolation. *Bradium Techs. v. Iancu*, 923 F.3d 1032, 1050 (Fed. Cir. 2019). NTT’s red-herring attacks on Lundby and Shpak *individually* neither refute the Petition’s motivation to combine nor demonstrate the Shpak-Lundby *combination* fails to disclose any limitation.

1. “Leakage Power” Is Irrelevant

NTT fixates on neither Shpak nor Lundby discussing the “power leakage” problem the ’551 Patent purports to solve. POR, 20, 38. However, “the motivation to modify a prior art reference...need not be the same motivation that the patentee had.” *Alcon Rsch v. Apotex*, 687 F.3d 1362, 1368 (Fed. Cir. 2012).

Petitioners identified a different reason—bandwidth augmentation—that motivated the Shpak-Lundby combination. Petition, 42-44; Williams-Decl., ¶¶125-131. Neither Shpak nor Lundby discussing “power leakage” is irrelevant.

2. NTT’s Assertion That Shpak Does Not Disclose Multiple Channels Is Wrong and Irrelevant

NTT argues there is no “disclosure of multiple channels in Shpak.” POR, 20. Yet, Shpak teaches then-existing 802.11-standards “define[d] 14 frequency channels.” Shpak, [0006]; DI, 23. Dr. Williams not seeing “*explicit* disclosure” of multiple channels does not undermine his unequivocal testimony that Shpak’s disclosure of an 802.11-based system disclosed multiple channels. Williams-Decl., ¶¶67, 104, 119, 138; Williams2, 69:18-71:18, 100:3-101:16.

If NTT suggests Shpak does not disclose *using* “multiple channels” to transmit data to a client that is true—unmodified Shpak APs only transmit data over the “common frequency channel.” But in the Shpak-Lundby combination, Shpak’s APs are *modified* based on Lundby to use multiple channels when desirable. Petition, 41-42.

NTT's assertion that "802.11 standards did not address multichannel systems" (POR, 21) is refuted by Bugeja (Petition, 44), which discloses *multichannel* APs using 802.11. Bugeja, [0027], FIG. 3. Moreover, NTT has not disputed Petitioners' evidence that POSAs would have expected success modifying Shpak's APs to transmit over two channels. Petition, 44.

3. NTT Dropped Its POPR Argument That Lundby's Code Channel Teachings Were Irrelevant to Shpak's Frequency Channel System

NTT's POPR argued differences between frequency-channel and code-channel systems minimized Lundby's relevance to Shpak, but the Board rejected those arguments and NTT no longer disputes POSAs would have found Lundby's teachings relevant to Shpak's system. DI, 30; Williams-Decl., ¶123. The POR's references to Lundby's code-based disclosures (POR, 21-24) only purportedly demonstrate Lundby does not disclose "power leakage" across frequency channels—a fact irrelevant to Ground 2 (*supra* §II.C.1).

4. Lundby Purportedly Not Addressing a Decision to Transmit is Irrelevant

NTT argues Lundby "*does not* address the decision of whether to transmit or not." POR, 25 (emphasis original). According to NTT, "Lundby *only* illustrates two outcomes—transmitting on the primary channel or both the primary and second channels," and does not illustrate a "situation where transmission is *prevented*." POR, 26 (emphasis original). These arguments ignore that Shpak-Lundby uses

Shpak’s decision to transmit *only when* the “common frequency channel” is available—transmission on the “secondary channel” is “prevented” when the “common frequency channel” is busy. Petition, 47.

In Ground 2’s *combination*, the “decision” to transmit (or not) is made using clear channel assessment (“CCA”) to determine whether the “common frequency channel” is idle, as *Shpak* teaches. Petition, 45-47. As NTT concedes (POR, 26-27, 32-33), at deposition Dr. Williams repeatedly defended the Petition’s explanation (Petition, 45-47) that Shpak-Lundby’s APs *only* perform Lundby’s Figure 2 method—to determine whether packets should be sent via one or two channels—if the “common frequency channel” is idle. Williams2, 46:23-47:24 (decision to “transmit” has “already [been] made” before performing Lundby’s Figure 2 method), 49:11-50:14 (“Lundby figure 2 is a flowchart *post* the decision to transmit...”), 50:15-18; *supra* §II.B.

Lundby’s alleged failure to address the decision to transmit is irrelevant because Shpak’s CCA makes that decision in the *Shpak-Lundby combination*. If the “common frequency channel” is busy, no transmission occurs over the secondary channel, thereby “preventing” transmission on that channel.

III. GROUND 3: BUGEJA-HO

A. “Mandatory Channel” Only Controls Transmissions to a Particular Client, Not All System Transmissions

The Board preliminary found (and NTT argues) Bugeja’s “primary channel” is not a “mandatory channel” because its idle status does not “control system transmission” because Bugeja-Ho’s APs can transmit on “secondary channels” even if the “primary channel” is busy. DI, 38-39; POR, 56. Respectfully, this finding cannot be sustained. In Bugeja-Ho, when a “mandatory channel” is set for a particular station—*i.e.*, an outer-region station assigned a “primary channel”—that station must “always” use the assigned primary channel “for transmission,” as claimed. That Bugeja-Ho’s APs can transmit on secondary channels to *other* stations—*e.g.*, inner-region clients—is irrelevant.

Limiting “mandatory channel” to a channel a transmitting station uses for *all* transmissions to *all* receiving stations—instead of just for all transmissions to a particular station for which the “mandatory channel” is set—is unsupported in the specification. As the Petition detailed, the specification is *explicit* that transmitting stations can treat receiving stations differently, and that transmissions can be sent to some stations regardless of the idle state of a “mandatory channel” set for *different* station(s). Petition, 62-63. *NTT’s expert conceded this*. Geier-Depo., 156:13-160:15.

Claims 2 (method) and 6 (apparatus) distinguish between two types of

receiving stations—one for which “a mandatory channel is set” (“STA A”) and another for which “no mandatory channel is set” (“STA B”). EX1001, 12:25-43, 13:1-17. These 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).” Thus, the “mandatory channel” is “always used for transmission” to receiving stations for which it is set (STA A), but *not* for transmission to other stations (STA B). This refutes any suggestion that “always used for transmission” as claimed refers to transmission to *all* receiving stations.

The specification describes an embodiment mirroring claims 2 and 6, and says that while transmissions to STA A must use the mandatory channel, “[t]here is no specific limitation to transmission to the STA B.” EX1001, 6:51-55. For transmission to STA B, the mandatory channel’s state “*need not be considered.*” *Id.*, 7:13-19. Elsewhere the specification teaches that “where there is an STA for which *no mandatory channel is set*, transmission *is enabled* between STAs including the STA *even when the mandatory channel is busy.*” EX1001, 12:7-11; Petition, 62; Geier-Depo, 161:8-162:23.

Thus, the specification and claims explicitly refute NTT’s assertion that the mandatory channel must “control [all] system transmission.” POR, 55-56 (quoting DI, 39). Nothing supports limiting the Challenged Claims to embodiments where *all* receiving devices have the same “mandatory channel” set.

Finally, even if interpreted to require the mandatory channel control all transmission to all clients, NTT did not refute Bugeja-Ho practices claim 1's method in scenarios where "all clients are outer-region clients, and thus all transmissions are over the primary channel." Petition, 63.

B. NTT's Additional Arguments Fail

NTT argues Bugeja-Ho is a "*single*-channel system"—not a "*multichannel* communication system" as required by NTT's construction and the Board's preliminary construction. POR, 55. The claims are not limited to a "multichannel" system. *Infra* §IV.A. Even if they were, as the Board found, "Bugeja discloses a system using '*multichannel* wireless access points'" wherein each AP can "communicat[e] simultaneously on the same three channels." DI, 35-36 (quoting Bugeja, Abstract, [0027]); Petition, 52-53; Bugeja, [0007]-[0009]. Bugeja-Ho is a "multichannel communication system."

NTT incorrectly argues that because the "primary channel" could be assigned to inner-region clients it is somehow not a "mandatory channel." POR, 57-58. Bugeja teaches benefits to reserving the "primary channel" for outer-region clients (Bugeja, [0032], [0037]), and those benefits motivated Petitioners' combination, which reserves that channel for outer-region clients (Petition, 61). NTT once again ignored the *Petition's combination*.

NTT argues a "secondary channel" assigned to a single-channel inner-region

client in Bugeja-Ho “becomes ‘mandatory’ for that device” and argues there cannot be different mandatory channels for different devices. POR, 56-57. That argument fails for the reasons *supra* §III.A. It likewise fails to address the Bugeja-Ho scenario wherein multi-channel inner-region clients are not assigned a single secondary channel, but rather assigned both secondary channels, neither of which is “mandatory” for transmission as either (or both) could be used. Petition at 69-70

For independent claims 2 and 6, NTT alleges Bugeja-Ho does not disclose “*distinguishing an STA A from an STA B*” (POR, 59-60) because these claims “require[] distinguishing a client based on **whether it has a ‘mandatory channel.’**” POR, 61 (emphasis original). By their plain language, these claims only require “distinguishing an STA A from an STA B.” The claims do not limit *how* the stations are distinguished. Bugeja-Ho distinguishes stations for which a “mandatory channel” is assigned—*i.e.*, outer-region clients assigned the primary channel—from stations for which no “mandatory channel” is assigned—*i.e.*, inner-region multi-channel clients assigned both secondary channels, either of which (or both) can be used for those clients such that neither channel is “mandatory” for those clients. Petition, 67-70. The claims require nothing more.

IV. GROUND 1: SHPAK-HO

NTT only argued Shpak-Ho allegedly does not meet the claimed “mandatory channel.” POR, §V. That argument hinges on NTT’s narrow construction, which

fails for the reasons detailed below. Additionally, even under the Board’s and NTT’s constructions, Shpak-Ho renders the claims obvious.

A. Claim Construction

The Board “preliminary determin[e]” “mandatory channel” means “one channel in a wireless *multichannel* communication system over which transmission must occur before transmission may occur over the other wireless channels.” DI, 21. This determination cannot be maintained.

1. Legal Standard

The Board applies the same claim construction standard as district courts to “promote[] consistency” and “reduc[e] the potential for inconsistent results.” 83 Fed. Reg. 51,340 at 51437-48. The Board should adopt the Court’s construction of “mandatory channel” for those same reasons and because *it is correct*.

2. Court’s Construction

The Court agreed with Petitioners that “mandatory channel” has a “plain-and-ordinary meaning,” and clarified it “may be the *only channel* and wherein its busy/idle state determines whether there is a transmission regardless of idle state of other channels (*if any*).” EX1055, 4. In so ruling, the Court explicitly rejected NTT’s contention that “mandatory channel” limits the claims to multichannel systems. *Id.*; EX1056, 14-17; EX1057, 7-9; EX1058, 21:3-30:24.

The Board’s construction is *not* “similar to the District Court’s construction.” DI, 21. The Court found “‘mandatory channel’ may be the only channel” (EX1055,

4), while the Board reached the directly *inconsistent* conclusion that “mandatory channel” cannot be “the only channel” (DI, 21). This difference can be dispositive because NTT’s Ground 1 arguments fail under the Court’s construction.

3. The Claims Are Not Limited to Multichannel Systems

“Mandatory channel” consists of two readily-understood words, neither of which limits the claims to multichannel systems.

The parties do not dispute the meaning of “channel.” The only disputed term is the adjective “mandatory.” A “mandatory channel” is simply a “channel” that is “mandatory.” Petition, 34; Williams-Reply, ¶¶6-9; *Altiris v. Symantec*, 318 F.3d 1363, 1372 (Fed. Cir. 2003).

Other claim language informs the meaning of “mandatory” by specifying a “mandatory” channel is “always used for transmission.” Petition, 34; Williams-Reply, ¶10; *ACTV v. Walt Disney*, 346 F.3d 1082, 1090 (Fed. Cir. 2003) (“surrounding context of the claims” informs meaning). Indeed, as discussed *infra* §IV.A.7, when addressing *identical* language, NTT told the European Patent Office (“EPO”) the “claims *already define* the mandatory channel by stating that it is a channel ‘*that is always used for transmission.*’” EX1059, 130 (italicized original).

Nothing limits “mandatory channel” to one of several channels. The Challenged Claims’ preambles—“identical” in this respect (DI, 18 n.8)—recite transmitting packets “simultaneously” using multiple channels—with or without

MIMO—or *alternatively* by using “a *single* wireless channel determined to be idle and MIMO.” Petition, 27-30; Williams-Reply, ¶¶13-14. Mr. Geier admits the preamble “treats single-channel MIMO and using ‘multiple wireless channels’ as *alternatives*.” Geier-Decl., ¶55 (emphasis original). As the Board recognized, the claims expressly cover single-channel *or* multi-channel transmissions. DI, 18-19.

Under NTT’s strained interpretation of claim 1’s *method*, transmitting packets over a single MIMO-implemented channel falls within the claim’s scope only if the *apparatus* on which it is performed has other channels unused in performing claim 1’s method. Williams-Reply, ¶15. Similarly, NTT’s interpretation of apparatus claim 5 rewrites “or” as “and” by requiring the claimed apparatus have “multiple wireless channels” despite claim 5 expressly claiming a “single channel” alternative (“or”). Petition, 28 (citing *TiVo*); Williams-Reply, ¶15.

The Board—citing Ho—preliminarily found “MIMO *requires* at least *two channels* or transmission links.” DI, 20. That finding cannot be maintained because Ho indisputably discloses MIMO over a *single channel*. Petition, 21-23; Williams-Decl., ¶¶75-79; POR, 49; Geier-Decl., ¶140; Geier-Depo., 113:17-116:13. Additionally, the ’551 Patent says—and the parties agree—MIMO requires only a single channel. EX1001, 1:61-63; Petition, 8-10; Williams-Decl., ¶¶39-41; POR, 64; Geier-Decl., ¶175; Geier-Depo., 21:6-22.

The Board also said “there can be no ‘setting’” of a mandatory channel if only one channel is provided. DI, 20; POR, 13 (advancing same argument). However, the factual predicate that “only one channel is provided” in the ’551 Patent or Shpak-Ho is wrong. Williams-Reply, ¶¶16-20. Both are 802.11-based systems. EX1001, 1:23-42; Shpak, [0003]-[0006]. While a single channel is used, *fourteen 802.11 channels* are provided from which the station selects its single transmission channel. Petition, 33; POR, 13; Williams-Decl., ¶34; Shpak, [0006]; Bugeja, [0023]-[0025]; Geier-Depo., 30:24-31:21. “Setting a mandatory channel” is not inconsistent with using a single transmission channel because one of the fourteen channels is set/selected to always be used for transmission. Williams-Reply, ¶21. This likewise refutes NTT’s argument (discussed below) that “there is nothing ‘mandatory’ about a channel if it is the only channel provided” (POR, 12 (quoting DI, 20)) because in single-transmission-channel systems there are thirteen other “provided” channels not used for transmission and one “mandatory” channel that always is.

NTT suggests the specification describes a two-step process whereby channels are “determined” from among those available in 802.11 “in advance” and then one is “set[]” as the mandatory channel. POR, 12-13. The specification describes *no* embodiment of the “single wireless channel...and MIMO” claimed alternative wherein the system engages in a two-step process whereby the “single” channel is selected from the available 802.11-channels “in advance,” and then an

additional unnecessary step is taken to “set” this single channel as the mandatory channel. Williams-Reply, ¶22. That second alleged step is nowhere described because it would be unnecessarily redundant—selecting a single channel sets that channel as a mandatory channel that will always be used. Williams-Reply, ¶23. NTT’s suggestion that there *must be* some difference between “determining” a channel and “setting” a mandatory channel or the claims would encompass admitted prior art ignores that the claims require “*simultaneous* transmissions” over a single *MIMO*-implemented wireless channel. The patent does not admit prior art 802.11-compliant systems “determined in advance” a single wireless channel used for *simultaneous* MIMO transmissions. Williams-Reply, ¶¶24-25.

NTT “agrees” with the Board “there is nothing ‘mandatory’ about a channel if it is the only channel provided.” POR, 12 (quoting DI, 20). But, as explained *infra* §IV.A.7, when discussing *identical* language, NTT told the EPO there were no “inconsistencies” that “in [the] case of only one channel [being present], this channel is defined as the mandatory channel.” EX1059, 130. When a single channel is used it is a “mandatory channel” because—as the claims say—that channel “is always used for transmission.” EX1001, 3:44-49. Additionally, the claims alternatively cover multi-channel systems with non-mandatory channels in addition to a mandatory channel. The claimed “*single* wireless channel...and MIMO” need not

be construed to require multiple channels to give “mandatory” meaning. Williams-Reply, ¶¶26-27.

Finally, NTT mischaracterizes claim 4 (POR, 13), which requires using “multiple wireless channels” or “MIMO.” Petition, 49-50, 74. **Method** claim 4 does not require an apparatus capable of selectively using both techniques, it only requires transmitting packets using *either* multiple wireless channels or multiple MIMO sub-channels. EX1001, 8:17-19; Williams-Reply, ¶¶28-29. The Board agreed with Petitioners’ understanding when applying claim 4 to Shpak-Lundby (DI, 31), and never cited NTT’s argument in its claim construction analysis (DI, 16).

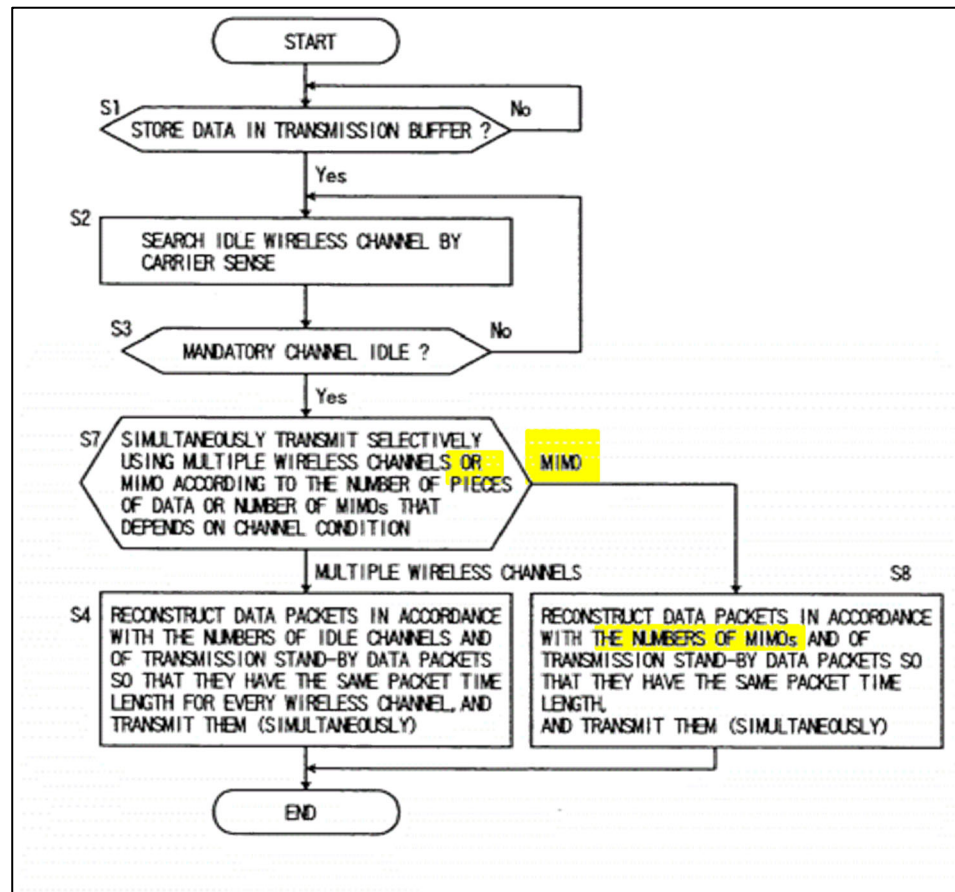
4. Specification Supports Petitioners’ Construction

The specification says transmissions can occur using “a [singular] *wireless channel* or wireless channels *that includes/include the mandatory channel.*” EX1001, 3:44-49, Abstract, 3:50-52, 11:65-66. The “invention relates to...transmitting a plurality of wireless packets using multiple wireless channels or Multiple Input Multiple Output (hereinafter, **MIMO**).” *Id.*, 1:15-19. Thus, the specification describes *single-channel* MIMO as an alternative to multiple channels.

Referring to Figure 8 (below), if MIMO is selected at S7, packets are reconstructed according to the number of MIMO subchannels used. *Id.*, 8:10-22, 2:4-6; Williams-Reply, ¶¶30-36. Figure 8’s method can be performed with a *single*

MIMO-implemented channel divided into, e.g., three MIMO *sub*channels.

Williams-Reply, ¶32.



Petitioners agree “the invention is *not limited* to a ‘single wireless channel.’”

DI, 20. That is because the claimed invention encompasses *either* single-channel or multichannel systems and is not limited to either. DI, 18-19; Petition, 27-30.

The Board said: “This is not a situation where *PO* proposes reading a limitation from the Specification into the claim.” DI, 20. Respectfully, that is *exactly* what NTT proposes—it seeks to *limit* the claims to multichannel systems because the specification describes multichannel embodiments.

The specification, however, has no “clear indication” limiting the invention to multichannel embodiments. *Liebel-Flarsheim v. Medrad*, 358 F.3d 898, 913 (Fed. Cir. 2004). NTT argues “in *every* embodiment” a “mandatory channel” is “one of multiple available channels.” POR, 14-15 (citing EX1001, 5:52-57, 7:8-12). But NTT’s cited embodiments do not use MIMO at all—they are examples of *just one of the three claimed transmission techniques*. Limiting the claims to those multichannel non-MIMO embodiments would eliminate the claims’ two MIMO-implemented techniques and ignore the applicants’ intent to cover other embodiments. EX1001, 11:58-60; Williams-Reply, ¶36.

5. NTT’s Reliance on Power Leakage Fails

NTT argues the claims should be limited to multichannel systems to meet the “purpose of the invention,” because the problem the patent addresses—power leakage—only occurs in multichannel systems. POR, 14. This too fails.

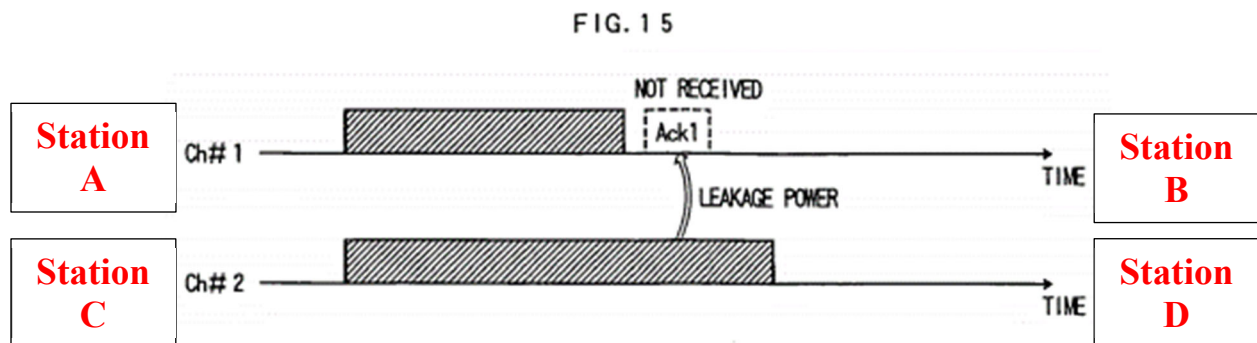
First, the Federal Circuit has long warned against limiting claims to an invention’s “essence” where—as here—their plain language is broader. *Raytheon v. Roper*, 724 F.2d 951, 957 (Fed. Cir. 1983); *Northrop Grumman v. Intel*, 325 F.3d 1346, 1354-56 (Fed. Cir. 2003) (same; “objectives of the patent”); *In re Rambus*, 694 F.3d 42, 47 (Fed. Cir. 2012) (same; “goals of the invention”).

Second, power leakage is *not limited* to multichannel systems. As the specification says:

This [“leakage power”] problem occurs *not only* in case of simultaneous transmission using multiple wireless channels *but also in a conventional case where wireless packets are transmitted by using one wireless channel* and an adjacent wireless channel that is affected by leakage power receives the wireless packets.

EX1001, 3:27-32; Williams-Reply, ¶¶37-38.

Using Figure 15 as an example, rather than a single station using multiple adjacent channels to simultaneously transmit data, there could be two stations each transmitting over a single channel but where the channels used by the two independent stations are adjacent, *e.g.*, Station-A transmits to Station-B on Ch#1 and Station-C independent transmits to Station-D on Ch#2.



Williams-Reply, ¶39.

Power leakage from transmissions on Ch#2 between Station-C and Station-D can cause Station-B not to receive transmissions Station-A sent via Ch#1. EX1001, 3:27-32; Williams-Reply, ¶40. The “leakage power” problem occurs despite each

station transmitting only on a single channel—*i.e.*, despite each being a single-channel system. EX1001, 3:27-32; Williams-Reply, ¶40. NTT’s argument that “the specification teaches that the problem addressed by the ’551 arises *specifically* in the context of multichannel systems” (POR, 14) is thus wrong. Contrary to the Board’s preliminary determination (DI, 21), construing the claims to encompass a “single wireless channel” is *not* contrary to the invention’s purpose (DI, 19) because POSAs would have known that setting a particular channel as the mandatory channel for a single-channel system provides the ability to organize stations in a manner that reduces leakage power. Williams-Reply, ¶¶41-42.

Finally, NTT argues the claims require multichannel systems because the specification says the “mandatory channel *can be* regarded as a wireless channel having the highest priority among wireless channels that have a plurality of priorities.” POR, 14. That the mandatory channel “can be” considered this way in multichannel systems does not limit the “invention” to multichannel systems.

6. Prosecution History

The applicants confirmed the claims cover transmissions using “one” channel, and used the definitional phrase “*i.e.*” to confirm “mandatory” meant “indispensable.” EX1002, 307.

NTT emphasizes that the Examiner rejected the claims over multichannel references. POR, 15. But, the claims cover *either* single-channel *or* multichannel

systems, so references disclosing either sufficed to reject them. *Brown v. 3M*, 265 F.3d 1349, 1352-53 (Fed. Cir. 2001).

7. NTT's European Admissions

NTT filed a European application sharing an identical specification with—and claiming priority to the same PCT application as—the '551 Patent. During that prosecution, NTT made admissions directly refuting its contention that “mandatory channel” limits the claims to multichannel systems. These statements “***must be considered.***” *Caterpillar Tractor v. Barco, S.P.A.*, 714 F.2d 1110, 1116 (Fed. Cir. 1983); *Apple v. Motorola*, 757 F.3d 1286, 1312-13 (Fed. Cir. 2014) (holding a patentee “to the statements made during [foreign] prosecution” where, as here, the two patents “are related and share a familial relationship”). None of NTT's admissions turn on European law—they address ***identical*** claim language and resolve the ***identical*** dispute the parties have here.

The European application's originally-filed claims were identical to the Challenged Claims. EX1059, 98-100.³ The EPO rejected claim 1 as anticipated and

³ The European prosecution is proper rebuttal evidence because it responds to arguments made in NTT's POR and the DI. 37 C.F.R. §42.23(b); *Idemitsu Kosan v. SFC*, 870 F.3d 1376, 1381 (Fed. Cir. 2017) (petitioners need not “preemptively address[]” counterarguments).

interpreted “wireless channel/wireless channels” to be “an alternative” such that “[i]f only one channel is present, then said only channel is automatically defined as ‘**mandatory.**’” *Id.*, 125-26 (emphasis original).

In response, NTT explained the claims cover “three ways of how [] wireless packets can be transmitted,” including “using a single wireless channel...and MIMO” (*id.*, 130), and said “[t]he fact that, ***in case of only one channel***, this channel is defined as the mandatory channel ***does not lead to any inconsistencies***” (*id.*). NTT thus admitted the claims cover a single MIMO-implemented channel and that when this single channel is the “only one” it “is defined as the mandatory channel.” This is what Petitioners argued (Petition, 27-30), and it contradicts NTT’s contention that interpreting the claims to cover “a single-channel system would render the claim language a nullity.” POR, 13.

NTT further told the EPO the “claims ***already define*** the mandatory channel by stating that it is a channel ‘***that is always used for transmission.***’” EX1059, 130 (italicized original). This is consistent with ***Petitioners’*** position and the Court’s determination that no construction is necessary. *Supra* §IV.A.2.

The EPO only allowed the application ***after*** NTT narrowed its claims by (1) limiting them to transmissions over multiple MIMO-implemented channels and (2) requiring the mandatory channel be one “***among multiple wireless channels.***” *Id.*, 184, 190. The absence of similar narrowing language in the Challenged

Claims—which were identical to the European claims before amendment—underscores they are *broad*er and do *not* require multiple channels. *Enzo Biochem v. Applera*, 599 F.3d 1325, 1333 (Fed. Cir. 2010); Williams-Reply, ¶¶46-51.

B. NTT Loses Under Petitioners’ Construction

NTT offered no argument that Shpak-Ho does not render claims 1, 3, 5, and 7 obvious if “mandatory channel” is given its plain meaning and not limited to multichannel systems. POR, 49-54; Geier-Decl., ¶¶139-150. NTT has waived any such argument. Paper 15, 8.

C. Petitioners Also Win Under the Board’s and NTT’s Constructions

Even if “mandatory channel” limited the claims to multichannel systems, Shpak-Ho renders the claims obvious because Shpak-Ho *is* a multichannel system. As Petitioners explained, Shpak-Ho’s APs selects one of *multiple different* wireless channels to be the “common frequency channel.” Petition, 33-34. Shpak-Ho is thus a “multichannel communication system,” and NTT identified no other reason why Shpak-Ho does not render claims 1, 3, 5, and 7 obvious.

V. GROUND 4

NTT misinterprets claims 4 and 8 to require stations capable of selecting between multi-channel and MIMO transmission, and argues neither Shpak-Ho-Thielecke nor Bugeja-Ho-Thielecke discloses such capability. POR, 63-64. As explained *supra* §IV.A.3, the claims limit how a station transmits packets using *either* multiple channels or MIMO—they do not require a station capable of both

multichannel and MIMO transmission. Petition 49-50, 74; Williams-Decl., ¶¶149-151, 249-252; Williams-Reply, ¶29.

The Board agreed with Petitioners’ interpretation of claims 4 and 8 because it found Shpak-Lundby met these claims despite Shpak-Lundby’s APs not being MIMO capable. DI, 31. NTT’s POR repeats *verbatim* its preliminary response (Paper 8, 45-47; POR, 63-64), and offers no credible explanation for its (mis)reading of claims 4 and 8. The POR only cites Mr. Geier whose testimony parrots the POR’s arguments and is entitled no weight. *Tesla*, IPR2019-01646, Paper 7, 19.

VI. MULTIPLE DEPENDENTS

Dependent claims 3-4 each depends from “claim 1 *or* 2” and claims 7-8 each depends from “claim 6 *or* 7.” Contrary to NTT’s suggestion (POR, 47-49, 53-54), demonstrating each of these multiple dependent claims unpatentable based on one of its dependencies suffices. *Dukane Corp. v. Herrmann Ultrascalltechnick*, IPR2016-00066, Paper 15, 15-17 (Apr. 26, 2017); *Dow Chem. v. Mee Indus.*, 341 F.3d 1370, 1377 (Fed. Cir. 2003) (affirming district court’s obviousness finding for a multiple dependent claim without separately considering each dependency).

VII. CONCLUSION

The Challenged Claims are unpatentable.

Respectfully,

Date: 08-11-2021

/Richard Giunta/
Richard Giunta, Reg. #36,149

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24, the undersigned certifies that the foregoing **PETITIONERS' REPLY TO PATENT OWNER'S RESPONSE** contains 5,586 words excluding; a table of contents, a table of authorities, a certificate of service or word count, or appendix of exhibits or claim listing. Petitioners have relied on the word count feature of the word processing system used to create this paper in making this certification.

Date: August 11, 2021

/MacAulay Rush/
MacAulay Rush
Paralegal
WOLF, GREENFIELD & SACKS, P.C.

CERTIFICATE OF SERVICE UNDER 37 C.F.R. § 42.6 (E)(4)

I certify that on August 11, 2021, I will cause a copy of the foregoing document, including any exhibits filed therewith, to be served via electronic mail, as previously consented to by Patent Owner, upon the following:

Steven R. Daniels
Jiageng Lu
Michael D. Saunders

SDaniels@dickinsonwright.com
JLu@dickinsonwright.com
MSaunders@dickinsonwright.com

Date: August 11, 2021

/MacAulay Rush/
MacAulay Rush
Paralegal
WOLF, GREENFIELD & SACKS, P.C.