IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,

SAMSUNG ELECTRONICS AMERICA, INC.,

Petitioners,

v.

XIFI NETWORKS R&D, INC.

Patent Owner.

Case IPR2025-01208

U.S. Patent No. 11,974,143

PETITIONER'S REPLY TO PATENT OWNER RESPONSE

TABLE OF CONTENTS

Page

I. CLAIM CONSTRUCTION 1
A. District Court Proceedings 1
B. The District Court Resolved The Claim-Construction Dispute 2
II. PATENT OWNER'S TERMINATION REQUEST SHOULD BE DENIED 4
III. ALL '143 PATENT CLAIMS ARE OBVIOUS 5
A. Chincholi Discloses All Disputed Limitations 5
1. Chincholi discloses the "virtual MAC interface" 5
2. Chincholi discloses "information regarding the bandwidth availabilities of the first, second and third wireless transceivers" 10
3. Chincholi discloses "transparent" operation 12
4. Chincholi "does not prevent" other wireless networking devices from using remaining bandwidth 14
5. Chincholi discloses "without requiring disassociation" 16
B. Motivation to Combine 18
IV. CONCLUSION 22

TABLE OF AUTHORITIES

Page(s)

Cases

Schwing GmbH v. Putzmeister Aktiengesellschaft,
305 F.3d 1318 (Fed. Cir. 2002).....3

Other Authorities

USPTO, Memorandum, *PTAB Consideration of Prior Findings of Fact and Conclusions of Law* (Sept. 16, 2025).....2

TABLE OF EXHIBITS

Exhibit	Description
EX1001	U.S. Patent No. 11,974,143 ("the '143 patent")
EX1002	Declaration of Kevin Almeroth, Ph.D.
EX1003	Certificate of Correction for U.S. Patent 11,974,143
EX1004	File History of U.S. Patent No. 11,974,143
EX1005	WO 2013/126859 ("Chincholi")
EX1006	Published U.S. Patent Application 2011/0320625 ("Riggert")
EX1007	U.S. Patent Application 2009/0141691 ("Jain")
EX1008	U.S. Patent 9,379,868 ("Wang")
EX1009	U.S. Patent 9,055,592 ("Clegg")
EX1010	U.S. Patent 10,567,147 ("DiFazio")
EX1011	Curriculum Vitae of Kevin Almeroth Ph.D.
EX1012	PO's District Court Infringement Contentions Cover Pleading
EX1013	PO's District Court Infringement Chart for U.S. Patent No. 11,974,143
EX1014	U.S. Patent 5,345,599 ("Paulraj")
EX1015	Gerard J. Foschini, "Layered Space-Time Architecture" (Foschini, Bell Labs Technical Journal, 1(2), 41-59) (1996)
EX1016	U.S. Patent 7,206,840 ("Choi")
EX1017	File History of U.S. Patent No. 11,818,591
EX1018	Intentionally Omitted
EX1019	Intentionally Omitted

Exhibit	Description
EX1020	Patent Owner's March 26, 2025 P.R. 3-1 Infringement Contentions
EX1021	Intentionally Omitted
EX1022	Intentionally Omitted
EX1023	Eastern District of Texas Calendar Events Set for October 19, 2026 (Oct. 9, 2025, 4:50 PM)
EX1024	Excerpt of Federal Court Management Statistics (June 30, 2025), https://www.uscourts.gov/sites/default/files/document/fcms_na_distprofile0630.2025.pdf
EX1025	Declaration of Patrick Schmidt in Support of Petitioner's Motion for Pro Hac Vice Admission
EX1026	Supplemental Declaration of Kevin Almeroth, Ph.D.
EX1027	Claim Construction Order (Dkt. 107) in *XiFi Networks R&D, Inc. v. Samsung Electronics Co., et al.*, No. 2:24-cv-01057 (E.D. Tex.)
EX1028	Joint Claim Construction Chart Pursuant to Patent Rule 4-5 (Dkt. 85) in *XiFi Networks R&D, Inc. v. Samsung Electronics Co., et al.,* No. 2:24-cv-01057-JRG (E.D. Tex.)

I. CLAIM CONSTRUCTION

A. District Court Proceedings

PO wrongly claims that Petitioners have "advanced six narrowing constructions, contrary to the positions they took in the Petition." POR 1-2. In actuality, the parties agreed on constructions for eight terms, including "plain and ordinary" meaning for five. EX1028 7-11. For the "information regarding bandwidth availabilities" term, Petitioner agreed only that the information must be "current," while disputing PO's attempt to require feedback "directly" from actual MAC and PHY interfaces. The District Court has since rejected PO's attempt to further narrow the term. EX1027 11-16, 25.

Petitioner proposed constructions for only three terms, all consistent with the Petition's application of the plain meaning. EX1028 5-6. These constructions were not offered for tactical advantage, but rather to prevent PO from reading the claims overbroadly. PO does ***not*** dispute that the Petition demonstrates these three terms are satisfied under Petitioner's proposed constructions, or the slightly broader constructions adopted by the District Court.

There is no inconsistency between Petitioner's District Court positions and the Petition. Petitioner agrees the District Court constructions should apply here, and the evidence and analysis in the Petition demonstrate that the challenged claims are unpatentable under those constructions. EX1026 ¶¶7-32.

B. The District Court Resolved The Claim-Construction Dispute

The only claim-construction dispute remaining is the "information regarding bandwidth availabilities" term. PO argued that the term requires information that can be obtained "***directly*** from at least the recited actual PHY interface(s) and the recited actual MAC interface(s)." POR 14-23. The District Court rejected that limitation, construing the term as "information regarding current bandwidth availabilities of each of the wireless transceivers." EX1027 11-16, 25.[1]

That construction resolves PO's "directly" argument. It also renders untenable PO's argument that the "processing interface" must be located at Layer 2. According to PO, the information must be obtained "directly" from actual PHY/MAC interfaces because the processing interface allegedly resides in the MAC sublayer/adjacent to the physical layer (i.e., Layer 2). POR 17-23. By rejecting the "directly" requirement, the District Court necessarily determined that the processing interface need not be "adjacent," which defeats PO's Layer-2 arguments.

---

[1] PO provides no reason to depart from the District Court's claim construction, and the Board should apply the same construction here. *See* USPTO, Memorandum, *PTAB Consideration of Prior Findings of Fact and Conclusions of Law* (Sept. 16, 2025) (Board must explain if it reaches a conclusion of law different from a district court's prior conclusion of law).

The Court's construction is consistent with the claim language. Claim 1 requires "first, second and third virtual PHY interfaces" that "feed information regarding the bandwidth availabilities of the first, second and third wireless transceivers back to the at least one virtual MAC interface." The plain meaning of "feed information regarding the bandwidth availabilities … back to" encompasses both direct and indirect feedback; it does not preclude the information passing through intervening layers. Nor does the claim language require the processing interface to occupy any particular protocol-stack layer. EX1026 ¶¶19-20.

The intrinsic record is in accord. Figure 1 depicts the "process layer" as distinct from both the actual MAC layer and actual PHY layer, with the actual MAC between the process layer and actual PHY. EX1001, Fig. 1. That embodiment would be excluded under PO's construction requiring that the information be obtained "directly" from ***both*** the actual PHY and actual MAC interfaces without passing through any intervening layer or interface. EX1026 ¶21.

PO's prosecution-history arguments do not justify importing a direct-feedback or Layer-2 requirement. PO and Dr. Akl do not attempt to show that any prosecution-history statements rise to the level of a clear and unmistakable disavowal. *Schwing GmbH v. Putzmeister Aktiengesellschaft,* 305 F.3d 1318, 1324 (Fed. Cir. 2002) (disavowal required to limit scope of claim). Nor could they. EX1026 ¶¶22-32.

Accordingly, the Board should apply the District Court's construction. Under that construction, PO's direct-feedback and Layer-2 arguments fail.

II. PATENT OWNER'S TERMINATION REQUEST SHOULD BE DENIED

The Director has already denied as untimely PO's request to terminate based on Petitioner's District Court claim-construction positions. Paper 20. The District Court's claim-construction order further confirms that termination is unwarranted.

PO wrongly argues that Petitioner's District Court claim-construction positions were inconsistent with the Petition. POR 24-29. Petitioner stipulated to the eight agreed-upon constructions only as a compromise to avoid unnecessary disputes; the parties agree those constructions are consistent with plain and ordinary meaning. For "information regarding bandwidth availabilities," PO—not Petitioner—sought to narrow by requiring information be obtained "directly" from actual MAC and PHY interfaces. Petitioner agreed only that the information must be "current." The District Court rejected PO's "directly" requirement and construed the term consistently with Petitioner's position. EX1027 11-16, 25.

Nor do Petitioner's proposed constructions for the preambles, "wireless networking device," and "frequency bands being different" create inconsistency. Petitioner offered those constructions after PO indicated it intended to apply the claims overbroadly. It is undisputed that Petitioner's proposals are all in line with

the Petition. PO does ***not*** dispute that the Petition demonstrates that these three terms are met.

Because PO does not dispute that the Petition demonstrates a "wireless networking device" in the prior art, its assertion that Dr. Almeroth's analysis is inconsistent with Petitioner's District Court construction is irrelevant. It is also wrong. In support of the Petition, Dr. Almeroth recognized that the claim preambles may be limiting, EX1002 ¶¶77-79, and opined that Chincholi's "NT" (which may operate as an access point) and "WTRU" (which may operate in ad-hoc mode) both qualify as a "wireless networking device." *Id.* Those opinions are consistent with Petitioner's proposed construction, and PO fails to show otherwise.

III. ALL '143 PATENT CLAIMS ARE OBVIOUS

A. Chincholi Discloses All Disputed Limitations

PO largely reprises the same core objections raised pre-institution, including that Chincholi lacks a "virtual MAC interface" and does not disclose the feedback, transparency, bandwidth-sharing, and disassociation limitations. PO and Dr. Akl identify no new evidence undermining the Petition's showing.

1. Chincholi discloses the "virtual MAC interface"

The Petition demonstrates that Chincholi's OMMA layer contains a "virtual MAC interface" under the stipulated construction—*i.e.*, "a software- or logical-based interface that is separately addressable from the recited actual MAC interfaces

and that obscures the recited actual MAC interfaces from higher protocol stack layers." Pet. 31-34.

First, Chincholi's OMMA is a "single thin software layer," EX1005 [0120], and thus satisfies the construction's requirement for a software- or logical-based interface. EX1002 ¶83; EX1026 ¶¶35-36.

Second, the placement of the OMMA to create a virtual interface between the actual MAC interfaces and higher layers results in MAC addresses not being visible to higher layers, thereby obscuring the actual MAC interfaces from higher layers. EX1002 ¶102; EX1026 ¶¶44-53. Indeed, Chincholi's OMMA handles data units to and from the MAC layer in the form of "MSDUs" (MAC Service Data Units), and data units to and from the IP layer in the form of IP packets, both of which a POSITA understands lack MAC headers having actual MAC addresses. EX1005 [0138] & Table 1; EX1026 ¶¶45-48. Specifically, a POSITA understands that the MAC layer receives MSDUs containing higher-layer data payloads and wraps those payloads with MAC headers, generating MPDUs (MAC Protocol Data Units). EX1026 ¶¶45-46. This confirms that Chincholi's OMMA "obscures" actual MAC interfaces from higher protocol-stack layers. *Id.* ¶¶49-50. Chincholi's OMMA also reorders packets before passing them to higher layers, hiding lower-layer out-of-order delivery and further obscuring lower-layer multi-RAT operation. EX1005 [0128], [0172]-[0178]; EX1026 ¶74.

Third, Chincholi's OMMA Controller is separately addressable from the actual MAC addresses. WTRUs in Chincholi send signaling messages regarding their availability to the OMMA of associated NTs. EX1026 ¶¶37-43. Chincholi teaches that (i) an NT advertises its RAT capabilities, (ii) a WTRU responds with a STA_RAT_Availability message identifying its available RATs, and (iii) the OMMA Controller at the NT receives the message and uses it to update its capability database. EX1005 [0243]-[0245], Fig. 31; EX1026 ¶¶39-40. The STA_RAT_Availability message directed from WTRUs to the OMMA of NTs includes "AP_Addr," EX1005 [0244], which is the address of the NT separate from the actual MAC addresses of the NT's individual RATs. EX1026 ¶¶40-43. A POSITA recognizes that the AP_Addr is a unique address, separate from the NT's actual MAC addresses, and is used by WTRUs to send signaling packets to the OMMA of associated NTs over the wireless medium. EX1026 ¶43. This confirms that the OMMA of each NT is "separately addressable" from the actual MAC interfaces. EX1026 ¶¶42-43.

PO's various arguments fall flat.

First, PO's assertion that actual MAC addresses from each RAT in Chincholi are "apparent to the OMMA and to layers above the OMMA," POR 33, is unsupported by anything in Chincholi. Because the OMMA deals with packets

lacking MAC headers, EX1026 ¶¶45-51; *see also* EX1005 [0138] (describing OMMA operating on MSDUs), PO's assertion is wrong.

Second, PO's argument that Chincholi's OMMA is not "virtual," POR 33-34, ignores that the OMMA is a "single thin software layer," EX1005 [0120], which meets the agreed-construction for "a software- or logical-based interface . . . ." EX1026 ¶¶33-36. In arguing that "a virtual MAC interface would have a programmed or non-static address," POR 33-34, PO imports new limitations into the claims. PO's argument that Chincholi does not contain the word "virtual," POR 33, is irrelevant—Dr. Almeroth explained how the substance of Chincholi would be understood to implement a "virtual" interface. EX1002 ¶¶102-104; EX1026 ¶¶33-36.

Third, PO is incorrect that the OMMA "merely acts as a conduit." POR 34. Chincholi's OMMA uses feedback and scheduling functionality to select and direct traffic among RAT/MAC/PHY paths, so higher layers exchange packets with OMMA rather than selecting the underlying actual MAC interfaces. EX1005 [0143], [0213]; *see also id.* [0161], [0205]; EX1026 ¶56. Chincholi's OMMA is not a passive conduit: it supports diversity, multiplexing, hybrid, and dynamic RAT-switching modes, uses traffic shaping and feedback-based routing to distribute packets across RATs, and includes packet-scheduling and re-ordering logic.

EX1005 [0150]-[0161], [0172]-[0178], [0187]-[0188], Figs. 10-13, 25; EX1026 ¶¶57, 74.

Fourth, PO's claim that the OMMA is "not disclosed as being a separately addressable entity," POR 34, overlooks the disclosed functionality described above wherein WTRUs may address signaling packets to the OMMA of an NT using an address separate from the actual MAC addresses of the NT. EX1005 [0243]-[0245], Fig. 31; EX1026 ¶¶39-43.

Fifth, PO's claim that the "Petition resorts to equivalents-type arguments," POR 34, is baseless. That Chincholi's OMMA embodies all of the functionality that the '143 patent associates with the "virtual MAC interface" supports the other evidence showing the claim term is met. EX1002 ¶¶101-104; EX1026 ¶54, 58-59. PO quibbles with the Petition's mapping of Chincholi's functional blocks to those in the '143 patent. POR 34-38. But PO tellingly does not dispute that dependent claims 8, 9, and 10, which require these functionalities, are met by Chincholi. EX1001, cls. 8-10; Pet. 58-62; EX1002 ¶¶150-154.

Sixth, PO's argument that because Chincholi's two or more RATs operate "independently" of one another, they are not "directed" by the OMMA, POR 35-36, is a non-sequitur. Petitioner identified how Chincholi's OMMA "directs" the RATs as claimed via the "MAC Resource Reservation Module" and the "Traffic Shaping

Module," which manage and direct traffic toward appropriate RAT resources. Pet. 32-34; EX1002 ¶¶103-104; EX1026 ¶55.

Seventh, PO's argument that Chincholi's OMMA does not disclose a "virtual MAC interface" because it is at "layer 3" of the protocol stack, POR 38-41, is inapposite. As discussed above, *supra*, Section I.B., there is no basis for requiring that the "virtual MAC interface" be located at any particular layer. The parties' stipulated construction imposes no MAC-sublayer or Layer-2 placement requirement. The District Court's rejection of PO's related "direct" feedback construction necessarily rejects PO's attempt to import layer-placement restrictions.

Regardless, even if PO's Layer-2 argument were correct as a matter of claim construction, the premise that Chincholi's disclosures are limited to "layer 3" is wrong. Chincholi teaches, "[t]he OMMA layer may not be an independent layer, but rather the functionality of the OMMA layer may reside partially on one or more layers (e.g., the IP layer, ***the MAC layer, etc.***) of the protocol stack." EX1005 [0122]. Chincholi therefore meets the claim limitation regardless. EX1026 ¶60.

2. Chincholi discloses "information regarding the bandwidth availabilities of the first, second and third wireless transceivers"

Contrary to PO's arguments at POR 41-43, Chincholi teaches feeding back "current" information regarding bandwidth availabilities. Its teachings are not limited to "historical metrics and averages." EX1026 ¶¶61-68. The OMMA

Controller collects "measurement metrics fed back from each RAT," including "channel quality metrics and the number of available resources on the medium." Pet. 30-31. Although some feedback metrics "***may*** reflect the average state of the system operating on each RAT," EX1005 [0141], that permissive disclosure does not exclude current resource-availability information. EX1026 ¶68.

Indeed, Chincholi teaches that "***[a]t startup***, the OMMA layer may receive the available bandwidth of each of the one or more RATs," and that "[a]t the beginning of the ***ramp-up phase***, the OMMA layer may receive RSSI values as seen by the one or more RATs." EX1005 [0167]; Pet. 29. A POSITA would understand those then-received available-bandwidth and RSSI values to disclose current bandwidth/resource availability. EX1026 ¶¶65-66. Chincholi also discloses dynamic RAT switching based on "***instantaneous*** channel quality/availability of the RATs," EX1005 [0154], which further confirms the information is "current." EX1026 ¶67.

Chincholi also identifies feedback metrics such as RSSI "level," "number of channels," and "channel bandwidth," and describes the OMMA Scheduler as using feedback metrics such as RSSI and medium-access delay for feedback-based routing. EX1005 [0215]-[0216]. A POSITA would understand these examples as further confirming that Chincholi's feedback is not limited to historical-only

averages. EX1026 ¶68. For example, RSSI level is a signal-strength metric, and number of channels and channel bandwidth are resource-availability metrics. *Id.*

PO's argument that the "information regarding the bandwidth availabilities of the first, second and third wireless transceivers" must be received "directly" fails under the District Court's construction. Even if the claim required direct feedback, Chincholi contemplates "direct" feedback to the extent the OMMA functionality may reside in the MAC. EX1005 [0122]; EX1026 ¶¶69-70.

3. Chincholi discloses "transparent" operation

PO wrongly asserts that Chincholi's transparent mode is disclosed in only "a single sentence." POR 46. Chincholi repeatedly distinguishes transparent and non-transparent OMMA operation and illustrates a "transparent OMMA Receiver" embodiment. EX1005 [0212], [0256], Fig. 34; EX1026 ¶77.

PO argues that the claim requires a "particular manner of achieving transparency" with respect to various functions. POR 47. But the stipulated construction merely requires operation "in a manner where any protocol stack layer of the wireless networking device above the processing interface is unaware of the operation of the processing interface." In transparent mode, the OMMA distributes, combines, and forwards packets between the RATs and IP layer without higher layers being aware of the OMMA's internal routing, combining, and RAT-selection

operations. EX1005 [0126], [0192]; EX1026 ¶¶72-74. That is precisely the transparency the claim requires. *Id*.

Chincholi's TCP discussion further confirms that the "transparency" limitation is met. Packets sent over different RATs may arrive out of order, causing the receiving TCP entity to believe a packet was dropped and to trigger retransmission or congestion-control behavior. EX1005 [0171]-[0173]. To address this issue, the OMMA layer may reorder packets based on OMMA sequence numbers, and may hold packets temporarily until the next expected packet arrives, before passing them up to higher layers. EX1005 [0176]-[0178]. Similarly, the OMMA of the transmitting device may also use MAC feedback to schedule packets in a manner that avoids triggering TCP congestion-control mechanisms. EX1005 [0179]. This further confirms that the OMMA manages multi-RAT operation "in a manner where any protocol stack layer of the wireless networking device above the processing interface is unaware of the operation of the processing interface." EX1026 ¶74.

PO's only other objection is that the "'processing interface' itself must contain the virtual MAC interface." POR 47. But Chincholi discloses that too. *Supra* §III.A.1. As Dr. Almeroth explained in his original declaration, "Chincholi discloses that the OMMA (*i.e.*, the processing interface) includes the claimed 'virtual MAC interface.'" EX1002 ¶102. Chincholi's software OMMA layer is positioned above

the actual MAC layers, presents a common interface to the IP layer, includes functionality to handle MSDUs rather than actual MAC-layer MPDUs and thereby obscures the actual MAC interfaces from higher protocol-stack layers, and is separately addressable from the actual MAC interfaces. EX1026 ¶¶75-76.

PO's argument that Chincholi discloses transparency only "above layer 3," POR 47-48, relies again on its misguided claim construction. *Supra* §I.B. The stipulated construction imposes no Layer-2 or MAC-sublayer requirement, and the District Court's rejection of PO's related "direct" feedback construction further undercuts PO's attempt to import layer-placement restrictions into the claims. It also overlooks Chincholi's Layer-2 embodiment. EX1005 [0122]; EX1026 ¶78.

Notably, while PO faults Chincholi's express transparency disclosure as insufficient, PO's written-description position in related Post Grant Review proceedings relies on a far thinner inference from Figure 1. See, e.g., PGR2025-00069, POR 76-77. Chincholi's transparent-mode OMMA disclosures at least render the limitation obvious. EX1026 ¶¶71, 79.

4. Chincholi "does not prevent" other wireless networking devices from using remaining bandwidth

According to PO, this limitation requires only "that two devices or two applications could share a single MAC/PHY pair at the same time." POR 49. PO also acknowledges that Petitioner and Dr. Almeroth identified Chincholi's "multi-WTRU multi-IP flow cases," including "multiple WTRUs, a single NT, and multiple

IP flows from the NT to one or more of the WTRUs." POR 50 (*citing* Pet. 53-54; EX1005 [0328]). That disclosure addresses both multiple devices and multiple applications sharing resources associated with a given MAC/PHY pair. EX1026 ¶¶80-86.

PO responds that Chincholi's packets are "queued and distributed sequentially." POR 50-51. But the Petition did not rely on queuing alone. It also relied on Chincholi's express disclosure of OFDMA operation, which a POSITA would understand to permit simultaneous allocation of different orthogonal frequency resources to different users. EX1005 [0161] & Table 2; EX1002 ¶¶141-142; EX1026 ¶¶83-86. PO's assertion that Chincholi does not describe OFDMA in sufficient detail, POR 52-53, is beside the point: OFDMA was a known and well-understood multiple-access technique, and Chincholi expressly identifies it as a mode of operation for the disclosed system. EX1026 ¶¶85, 88-89.

PO's argument that WTRUs "may contend with each other," POR 51-52, fares no better. The cited Chincholi passages concern WTRUs contending with one another for a ***shared*** frequency resource. *Id.* (*citing* EX1005 [0117]). This does not preclude different WTRUs from simultaneously using ***different*** frequency resources within the available bandwidth, as contemplated by OFDMA. EX1026 ¶87.

Again, PO's position that Chincholi is deficient is impossible to square with its written-description argument in related Post Grant Review proceedings. For

example, PO contends this limitation is adequately supported by the shared specification's Figure 1, which allegedly depicts App A and App D sharing a MAC/PHY pair. PGR2025-00069, POR 51-53, 85-86. But, unlike Chincholi's more detailed disclosures, Figure 1 does not disclose ***simultaneous*** use of different portions of available bandwidth by different users, as PO claims is required of the prior art. POR 50-51. PO cannot rely on its own expansive reading of Figure 1 while denying that Chincholi's express disclosures of multi-WTRU/multi-IP-flow operation and OFDMA render the limitation at least obvious. EX1026 ¶¶88-89.

5. Chincholi discloses "without requiring disassociation"

PO contends this limitation requires only that the system "not operate based on what is known as 'break before make,'" and that Chincholi is a break before make system. POR 54. But PO ignores Chincholi's express disclosure that, when a RAT switch occurs, "the OMMA sender may duplicate packets across the RATs to avoid out-of-order packet reception at the OMMA receiver." EX1005 [0255]; EX1026 ¶93. A POSITA understands that duplicating packets across RATs during switching means that the prior RAT path remains available during the switch and is not broken before the new RAT path is used. EX1026 ¶¶93-94. This is further described as part of Chincholi's "soft handover process." EX1005 [0381]; EX1026 ¶93. That refutes PO's characterization that Chincholi discloses only "break before make." EX1026 ¶94.

PO's argument that Chincholi teaches "disabl[ing]" low-quality RATs, POR 54-55, does not suggest otherwise. EX1026 ¶¶90-91. Nowhere in PO's cited passages does Chincholi teach or suggest that the low-quality RAT is disabled *before* switching to the better-quality RAT. EX1005 [0154]-[0155]; EX1026 ¶¶95-96. Chincholi instead teaches selecting a best RAT based on "instantaneous" channel quality/availability and, when a switch is required, duplicating packets across RATs during the switch, which demonstrates "make before break." EX1005 [0154], [0255]; EX1026 ¶¶92-94. Chincholi also does not equate disabling or not using a RAT with disassociating the recipient from the underlying MAC/PHY interfaces. EX1026 ¶¶95-98. Dr. Akl's contrary opinion simply assumes that "disabling" a RAT requires MAC/PHY disassociation before switching, but he identifies no Chincholi disclosure requiring that sequence. EX1026 ¶¶95, 98-99.

PO's arguments about the prior art are also irreconcilable with its written-description argument in related Post Grant Review proceedings. PO contends that shared specification's Figure 1's mere depiction of two applications connected to multiple radios indicates "make before break." PGR2025-00069, POR 83-84. But the shared specifications nowhere discuss "make before break," "break before make," or any equivalent concept. Nor do they disclose a recipient associated with first and second MAC/PHY pairs and then transmitting without requiring disassociation from one or both. PO cannot rely on pure inference from Figure 1 to

supply this limitation for written-description purposes, yet dismiss the Petition's materially more substantial prior-art showing as insufficient.

B. Motivation to Combine

PO and Dr. Akl attack strawmen. They argue that a POSITA would not have combined Chincholi with Riggert because Riggert's "bondable virtual interfaces" are allegedly used for transmitting streaming data between devices, not for feedback within a device, and because Riggert allegedly operates at a different layer of a protocol stack. POR 57-63. They also argue that a POSITA would not have combined Chincholi/Riggert with Choi because Choi allegedly uses a conventional "break before make" system and OFDM, not OFDMA. POR 63-65. None of those arguments addresses the combinations the Petition actually presented. Pet. 12-16, 34-38, 78-84; EX1002 ¶¶63-64, 68, 70-76, 106-110, 184-194; EX1026 ¶¶100-117.

First, the Petition did not rely on Riggert to supply Chincholi's feedback architecture. Chincholi already discloses that its OMMA layer uses feedback-based routing, including "measurement metrics fed back from each RAT," such as "channel quality metrics and the number of available resources on the medium." Pet. 34-35. Chincholi also discloses that its OMMA Controller interfaces with each RAT over the A2 interface to collect feedback metrics regarding channel quality and available resources. *Id.* As Dr. Almeroth explained, "[i]t would have been obvious to a POSITA to incorporate first, second, and third virtual PHY interfaces into the

OMMA Controller of Chincholi to collect the disclosed feedback metrics from each RAT over the 'A2' interface and feed it back to the virtual MAC interface." *Id.*; EX1002 ¶106. The Petition relied on Riggert for "[f]urther details regarding the implementation" of virtualized physical interfaces that a POSITA would have found obvious to include—not to replace Chincholi's OMMA feedback mechanism. Pet. 36-38; EX1002 ¶¶106-110; EX1026 ¶¶102-103.

Second, PO's argument that Riggert transmits streaming data rather than feedback misses the point. The Petition relied on Riggert's teaching that a "bondable virtual interface" provides one way to implement a virtualized, flexible interface to actual PHY interfaces that can be used generically and substituted across differently configured PHY interfaces. Pet. 12-16, 34-38; EX1002 ¶¶64, 70-76, 106-110. A POSITA would have understood that this virtualized-interface teaching could be applied to Chincholi's OMMA Controller for the purpose identified in the Petition: collecting feedback metrics from each RAT over Chincholi's A2 interfaces and providing that information to Chincholi's traffic-shaping module. Pet. 34-38; EX1002 ¶¶106-110; EX1026 ¶¶102-103. The fact that Riggert discloses one use of its bondable virtual interfaces in a streaming-data context does not negate the Petition's reliance on the broader virtualized-interface teaching. EX1026 ¶¶104-105.

PO's argument that "any feedback that is transmitted in Riggert's system is across devices," POR 59, is also wrong on the merits. In the discussion of Figure 8, upon which PO relies, Riggert expressly teaches how bondable virtual interface 236 "gathers information regarding data sent over the multiple data communication channels," and sends this information through Riggert's traffic proxy 248 to the traffic monitor 234. EX1006 [0113]. A POSITA would recognize that the "information regarding data sent over the multiple data communication channels" that is gathered by the bondable virtual interface and sent to the traffic monitor is feedback information relating to the condition of the channel over which the data was sent. EX1026 ¶105. PO is therefore simply wrong that Riggert does not contemplate using the bondable virtual interfaces to collect feedback information as contemplated by the '143 Patent.

Third, PO's layer-stack argument rests on importing limitations not required by the claims. The claims do not require the virtual PHY interfaces to reside at any particular OSI layer or MAC sublayer. Nor do they require the "processing interface" to be located at Layer 2. Thus, PO's assertion that Riggert operates at a different layer does not undermine the combination. EX1026 ¶106. The Petition's combination places the virtualized interfaces in Chincholi's OMMA Controller to interface with the RATs and collect the same feedback metrics Chincholi already discloses. Pet. 34-38; EX1002 ¶¶106-110; EX1026 ¶106.

Fourth, PO's attack on Choi likewise misses the point. Choi is not relied on to supply the "without requiring disassociation" or "does not prevent" limitations. The Petition relied on Choi in Ground 2 for claims 19-29 to provide additional detail regarding dynamic channel selection, including measuring frequency-channel characteristics, selecting the channel with the minimum interference signal level based on RSSRI and CCA values, and improving Chincholi/Riggert's ability to flexibly and efficiently utilize available bandwidth channels while minimizing mutual interference. Pet. 78-84; EX1002 ¶¶184-194; EX1026 ¶¶110-115. PO's assertion that Choi does not itself disclose make-before-break operation or OFDMA sharing therefore does not undermine the reason to combine. Chincholi supplies the base maintained-association and sharing disclosures discussed above; Choi supplies a predictable channel-quality-selection technique that a POSITA would have been motivated to apply to Chincholi/Riggert's feedback-based system. Pet. 78-84; EX1002 ¶¶184-194; EX1026 ¶¶110-116.

Finally, PO's hindsight argument is wrong. The Petition identified concrete, non-hindsight reasons to combine. Riggert's virtualized physical interfaces would provide Chincholi with a flexible, reconfigurable, and generic interface for differently configured PHY interfaces and different 802.11 generations. Pet. 12-16, 34-38; EX1026 ¶¶107-109. Choi's channel-quality-selection teachings would further improve Chincholi/Riggert by allowing the system to evaluate candidate

channels and switch to an alternative channel based on measured channel-quality characteristics, including RSSRI and CCA values. Pet. 78-84; EX1002 ¶¶184-194; EX1026 ¶¶110-117. These are predictable uses of known techniques to improve Chincholi's multi-RAT system, not hindsight reconstruction. EX1026 ¶117.

IV. CONCLUSION

The Board should cancel all claims of the '143 patent.

DATED: June 30, 2026

Respectfully submitted,

By: */s/ James Glass*
James M. Glass

Counsel for Petitioners

CERTIFICATE OF COMPLIANCE

This Reply complies with the type-volume limitation of 5,600 words, comprising 4,455 words, as counted using the Microsoft Word software that was used to prepare this paper, excluding the parts exempted by 37 C.F.R. § 42.24(c).

Respectfully submitted,

DATED: June 30, 2026

By: */s/ James Glass*

James M. Glass (Reg. No. 46,729)
QUINN EMANUEL URQUHART & SULLIVAN, LLP
295 Fifth Avenue, 9th Floor
New York, NY 10016
Tel: (212) 849-7000
jimglass@quinnemanuel.com

Counsel for Petitioners Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc.

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6, I hereby certify that on June 30, 2026 the foregoing document was served via email on the following counsel of record:

CMorton@RobinsKaplan.com

JGutierrez@RobinsKaplan.com

AFahrenkrog@RobinsKaplan.com

RKXiFi@RobinsKaplan.com

DATED: June 30, 2026

Respectfully submitted,

By: */s/ James Glass*

James M. Glass (Reg. No. 46,729)
QUINN EMANUEL URQUHART & SULLIVAN, LLP
295 Fifth Avenue, 9th Floor
New York, NY 10016
Tel: (212) 849-7000
jimglass@quinnemanuel.com

Counsel for Petitioners Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc.