

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

QUALCOMM INCORPORATED,
Petitioner,

v.

NETWORK SYSTEM TECHNOLOGIES, LLC,
Patent Owner.

IPR2024-00343
Patent 7,594,052 B2

Before CHARLES J. BOUDREAU, STEVEN M. AMUNDSON, and
IFTIKHAR AHMED, *Administrative Patent Judges*.

BOUDREAU, *Administrative Patent Judge*.

DECISION

Denying Patent Owner's Request on Rehearing of Final Written Decision
37 U.S.C. § 42.71(d)

I. INTRODUCTION

Network System Technologies, LLC (“Patent Owner” or “NST”) requests rehearing of the Board’s June 13, 2025, Final Written Decision determining that claims 1–7 of U.S. Patent No. 7,594,052 B2 (Ex. 1001, “the ’052 patent”) are unpatentable (Paper 65, “Final Dec.”). Paper 66 (“Req. Reh’g”).

According to 37 C.F.R. § 42.71(d), “[t]he burden of showing a decision should be modified lies with the party challenging the decision,” and the “request must specifically identify all matters the party believes the Board misapprehended or overlooked.” The burden here, therefore, lies with NST to show we misapprehended or overlooked the matters it requests that we review.

For the reasons explained below, we deny Patent Owner’s request.

II. ANALYSIS

A. *Procedural History*

Qualcomm Incorporated (“Qualcomm” or “Petitioner”) and Samsung Electronics Co., Ltd. (“Samsung”) filed a Petition for *inter partes* review of claims 1–7 (“the challenged claims”) of the ’052 patent on December 19, 2023, pursuant to 35 U.S.C. § 311 et seq. Paper 3 (“Pet.”). After considering the Petition, a Preliminary Response filed by NST (Paper 7), a Preliminary Reply filed by Qualcomm and Samsung (Paper 9), and a Preliminary Sur-reply filed by NST (Paper 10), the Board instituted an *inter partes* review of the challenged claims in a June 21, 2024, Decision on Institution (Paper 11).

After institution, Samsung and NST reported that they had entered into a confidential settlement agreement resolving the dispute between them, and the Board granted a joint motion to terminate Samsung from the

proceeding. Paper 25. Thereafter, NST filed a Response to the Petition (Paper 38, “PO Resp.”), Qualcomm filed a Reply (Paper 48, “Reply”), and NST filed a Sur-reply (Paper 55, “Sur-reply”). We held an oral hearing in this proceeding on March 20, 2025, and the transcript is entered into the record. Paper 64 (“Tr.”).

Following consideration of the parties’ respective arguments and the trial record, we issued a Final Written Decision concluding that Qualcomm had demonstrated by a preponderance of evidence that all of the challenged claims are unpatentable under 35 U.S.C. § 103(a) over the combination of A. Rădulescu et al., *An Efficient On-Chip Network Interface Offering Guaranteed Services, Shared-Memory Abstraction, and Flexible Network Configuration*, Proceedings of the Design, Automation and Test in Europe Conference and Exhibition, 2004 (Ex. 1005, “Rădulescu2004”) and Open Core Protocol Specification, Release 1.0, OCP-IP Association (2001) (Ex. 1006, “OCP”). *See* Final Dec. 10–70, 72.

B. The Challenged Claims

Of the challenged claims, claims 1, 6, and 7 are independent. In their briefing, the parties focused on claim 6, which reads as follows:¹

6. [6.pre.1] Method of communication service mapping in an integrated circuit, having a plurality of processing modules (M, S), [6.pre.2] wherein at least one first of said processing modules (M) requests at least one communication service to at least one second processing module (S) based on specific communication properties and *at least one communication service identification*, wherein said at least one communication service identification comprises at least one

¹ For ease of reference, we refer to bracketed designations provided in the Petition for the preamble recitations and limitations of the challenged claims. *See* Pet. 83–86.

communication thread or at least one address range, said address range for identifying one or more second processing modules (S) or a memory region within said one or more second processing modules (S), comprising the steps of:

[6.a] coupling said plurality of processing modules (M, S) by an interconnect means (N) and

[6.b] enabling a connection based communication having a set of connection properties,

[6.c] controlling the communication between said at least one first of said plurality of processing modules (M) and said interconnect means (N) by at least one network interface (NI) associated to said at least one first of said processing modules,

[6.d] mapping the requested at least one communication service based on said specific communication properties to a connection based on a set of connection properties *according to said at least one communication service identification*.

Ex. 1001, 10:7–32 (emphasis added). Like limitation 6.d, limitations 1.e and 7.f of claims 1 and 7, respectively, recite “a mapping means (A) for *mapping the requested at least one communication service based on said specific communication properties to a connection based on a set of connection properties according to said at least one communication service identification*.” *Id.* at 9:41–50, 10:54–58 (emphasis added).

C. The Final Written Decision

In the Final Written Decision, we found that Petitioner demonstrated by a preponderance of the evidence that Rădulescu2004 discloses limitations 6.a, 6.b, 6.c, and “mapping the requested at least one communication service based on said specific communication properties to a connection based on a set of connection properties,” as recited in limitation 6.d. Final Dec. 52–53. We further found, however, that Petitioner had not made a sufficient showing that Rădulescu2004 discloses a communication

service identification that includes “at least one communication thread or at least one address range,” as recited in the preamble of claim 6 (and similarly in the preamble of claim 7). *Id.* at 50–51. We did not make an express determination whether the preamble recitation is limiting; nonetheless, because the recitation of the communication service identification in the preamble of claim 6 provides antecedent basis for the later recitation “according to said at least one communication service identification” in limitation 6.d, we found that Rădulescu2004 failed to disclose mapping specifically “according to said at least one communication service identification,” as limitation 6.d recites. *Id.* at 53. Therefore, we concluded that Petition did not establish by a preponderance of the evidence that claim 6 (or, likewise, any of the remaining challenged claims) was anticipated by Rădulescu2004. *Id.* at 53–54. Notwithstanding our conclusion that Petitioner did not establish that any of the challenged claims were anticipated by Rădulescu2004, however, we determined that Petitioner established by a preponderance of the evidence that all of the challenged claims were unpatentable as obvious over the combination of Rădulescu2004 and OCP. Final Dec. 63–71.

D. NST’s Arguments on Rehearing

In the Request for Rehearing, NST argues that, in concluding that the challenged claims are unpatentable over the combination of Rădulescu2004 and OCP, the Final Written Decision “misapprehended or overlooked its earlier finding in Ground 1 [i.e., anticipation by Rădulescu2004] that because Rădulescu2004 does not disclose limitation 6.pre.b, which requires a ‘communication service identification,’ Rădulescu2004 necessarily does not disclose limitation 6.d, which requires ‘mapping . . . according to said at

least one communication service identification,” and that, “[a]s a result, the Decision misapprehended or overlooked Patent Owner’s arguments and evidence showing that even if Rădulescu2004 and OCP were combined as proposed in the Petition, Petitioner did not show that this combination would satisfy the ‘mapping’ recited in limitation 6.d.” Req. Reh’g 1. More particularly, NST argues, “[i]n rejecting Petitioner’s challenge under Ground 1, the Decision found that Rădulescu2004 does not disclose either (1) the ‘communication service identification’ recited in limitation 6.pre.b or (2) the ‘mapping . . . according to said at least one communication service identification’ recited in limitation 6.d,” but “in Ground 2 [i.e., obviousness over Rădulescu2004 and OCP], the Decision overlooked its finding in Ground 1 . . . and incorrectly stated that Rădulescu2004 discloses all limitation[s] of claim 6 except the ‘communication service identification’ in the preamble.” *Id.* at 1–2 (citing Final Dec. 50–51, 67).

NST further contends that “the Board should rehear its finding that Rădulescu2004 and OCP disclose limitation 6.d,” arguing that

Patent Owner presented arguments and evidence that even if (1) OCP discloses an address range or communication thread as recited by limitation 6.pre.b and (2) a [person of ordinary skill in the art] would have been motivated to combine Rădulescu2004 and OCP, that combination would not cure Rădulescu2004’s failure to disclose the “mapping . . . according to said at least one communication service identification” as required in limitation 6.d. . . .

The Decision’s statement that Rădulescu2004 discloses “*all* limitations” except the “communication service identification” overlooks the Decision’s finding in Ground 1 that “Rădulescu2004 also does not disclose mapping specifically ‘according to said at least one communication service identification’” as required in limitation 6.d. In other words, for

Ground 2, the Decision appears to have incorrectly assumed that Rădulescu2004 discloses limitation 6.d. . . .

This oversight led the Decision to overlook or misapprehend key arguments and evidence showing that, like Rădulescu2004, O[CP] does not disclose the claimed “mapping.”

Req. Reh’g 4–5 (title case omitted) (internal citations omitted) (citing PO Resp. 47–53; Sur-reply 14–15; Tr. 48:8–49:11, 50:21–23; Final Dec. 52, 61–67).

E. Discussion

We have considered NST’s arguments but find them unpersuasive. As an initial matter, notwithstanding NST’s assertion, the Final Written Decision does not state that Rădulescu2004 discloses all limitations of claim 6 “except the ‘communication service identification’ *in the preamble*” but instead that, “[f]or the reasons stated in Section III.D.3.c above,^[2] we find that Rădulescu2004 discloses all limitations of claim 6 other than a ‘communication service identification . . . compris[ing] at least one communication thread or at least one address range.’” Final Dec. 67. As NST points out, “[b]ased on antecedent basis, the phrase ‘said at least one communication service identification’ in limitation 6.d unquestionably refers to the same ‘communication service identification’ recited in limitation 6.pre.b, which the Decision found Rădulescu2004 does not disclose.” Req. Reh’g 4. Read in context, our finding in the Final Written Decision that “Rădulescu2004 discloses all limitations of claim 6 other than a ‘communication service identification . . . compris[ing] at least one communication thread or at least one address range’” refers to *both instances*

² “Section III.D.3.c” refers to the discussion of the Rădulescu2004 anticipation ground in the Final Written Decision.

of that phrase in claim 6—i.e., not only that “in the preamble,” but also the recitation of “communication service identification” in limitation 6.d. Final Dec. 67.

Contrary to NST’s arguments, the analysis of Ground 2 in the Final Written Decision did not “overlook[] the Decision’s finding in Ground 1” or “assume[] that Rădulescu2004 discloses” the entirety of limitation 6.d. In the discussion of the Ground 1, we found that Rădulescu2004 discloses only a portion of limitation 6.d—namely, “mapping the requested at least one communication service based on said specific communication properties to a connection based on a set of connection properties”:

We . . . determine that Petitioner has shown by a preponderance of the evidence that Rădulescu2004 discloses “mapping the requested at least one communication service based on said specific communication properties to a connection based on a set of connection properties,” as recited in limitation 6.d. . . . Nonetheless, because we find, for the reasons set forth in the discussion of preamble recitation 6.pre.2 above, that Rădulescu2004 does not disclose a “communication service identification . . . compris[ing] at least one communication thread or at least one address range,” we find that Rădulescu2004 also does not disclose mapping specifically “according to said at least one communication service identification.”

Final Dec. 52–53. Consistent with that determination with respect to Ground 1, we explained in the analysis of Ground 2 that “we are persuaded by Petitioner’s arguments and evidence that *that remaining limitation*”—referring specifically to the “communication service identification . . . compris[ing] at least one communication thread or at least one address range” recited in the preamble and referenced in limitation 6.d—“is taught by OCP and that a person of ordinary skill in the art would have been motivated to combine OCP’s teachings with Rădulescu2004 and would have

had a reasonable expectation of success in doing so.” *Id.* at 67 (emphasis added).

Notwithstanding NST’s further arguments, we also are not persuaded that the Final Written Decision overlooked or misapprehended evidence that, for example, “OCP cannot disclose the claimed ‘mapping,’” or alleged “inconsistencies in Petitioner’s arguments” regarding OCP’s disclosures. *See* Req. Reh’g 6–7. As set forth in the Final Written Decision, we found with respect to the “communication service identification” recited in the preamble of claim 6 and limitation 6.d, that Petitioner had persuasively shown that OCP discloses communication service requests based on communication service identifiers that include both a thread and an address range, as further recited in the preamble of claim 6, and that a person of ordinary skill in the art would have been motivated to implement the OCP in the system of Rădulescu2004, including its disclosed threads and address range teachings, particularly given that Rădulescu2004 itself expressly identifies OCP as an existing protocol with which its network on chip (“NOC”) is compatible. *See* Final Dec. 63 (citing, e.g., Pet. 41–42; Ex. 1003 ¶ 172; Ex. 1006, 24, 26, 28, 38), 67. With respect to limitation 6.d in particular, we were persuaded by Petitioner’s arguments that a person of ordinary skill “would have found it obvious for an OCP adapter in the network interface of Rădulescu2004 to map the OCP address signals (‘MAddr,’ ‘MAddrSpace’) in request from system initial IP cores to connections through Rădulescu2004’s NoC” and that “mapping requests to connections according to a communication service identification comprising a Thread ID would have been obvious in view of OCP,” which, like Rădulescu2004, “describes the use of ‘connections,’ for the transfer of requests with specified communication properties over an

interconnect,” and “further explains that the thread identifier (MThreadID) is mapped to a connection identifier (MConnID) during the request phase.” *Id.* at 64 (quoting Pet. 43–44 (citing Ex. 1003 ¶¶ 174–177; Ex. 1006, 22, 47, 120, 180–81)), 67. Contrary to NST’s arguments, we discern no inconsistency in Petitioner’s arguments that OCP discloses communication service identifiers that include both a thread and an address range and that a person of ordinary skill in the art would have been motivated to implement OCP’s teachings in the system of Rădulescu2004, on the one hand, and its explanation that the combination does not call for the bodily incorporation of OCP’s interfaces in Rădulescu2004’s system, on the other. *See* Pet. 41–42; Ex. 1030 ¶ 47; *see also In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (“The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art.”).

A request for rehearing is not an opportunity merely to disagree with the panel’s assessment of the arguments or weighing of the evidence. In reaching our conclusions in the Final Written Decision, we fully considered the trial record, including all arguments and evidence presented by NST, and determined, upon weighing the evidence, that Petitioner demonstrated by a preponderance of the evidence that the challenged claims are unpatentable over the combined teachings of Rădulescu2004 and OCP. We have considered but are not persuaded by NST’s arguments that we misapprehended or overlooked the matters raised on rehearing, and we see no reason to disturb our Final Written Decision.

III. CONCLUSION

In conclusion, the Request for Rehearing does not demonstrate that the Final Written Decision misapprehended or overlooked any matters in the case.

Outcome of Decision on Rehearing:

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Denied	Granted
1–7	103	Rădulescu2004, OCP	1–7	

Final Outcome after Rehearing:

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1, 2, 5–7	102	Rădulescu2004		1, 2, 5–7
1–7	103	Rădulescu2004, OCP	1–7	
1–7	102	Weber ³		
1–7	103	Weber, Rădulescu2004 ⁴		
Overall Outcome			1–7	

³ As explained in the Final Written Decision, we do not reach this ground. See Final Dec. 70–71.

⁴ As explained in the Final Written Decision, we do not reach this ground. See Final Dec. 70–71.

IV. ORDER

Accordingly, it is

ORDERED that the Request for Rehearing is *denied*.

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