

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Arm Ltd, MediaTek Inc.,

Petitioners

v.

Daedalus Prime LLC,

Patent Owner

Patent No. 8,984,228
Case No. IPR2025-00207

PETITIONER ARM LTD'S ISSUE PRECLUSION BRIEF

TABLE OF CONTENTS

I.	The Board Should Reject PO’s Attempt To Impose Additional Restrictions On The Claim Construction Of “Single Caching Agent....”	3
II.	The Board’s Factual Finding That Sinharoy Discloses The “Single Caching Agent” Estops PO From Relitigating That Issue.....	4
III.	The Board’s Factual Findings In IPR2023-01344 That Sinharoy Discloses All Elements Of The Challenged Claims Of The ‘895 Patent Estops PO From Re-Litigating Those Same Claim Elements In The ‘228 Patent.	6

LIST OF EXHIBITS

<u>Exhibit</u>	<u>Description</u>
Ex-1001	U.S. Patent No. 8,984,228 to Liu et al. (“the ’228 patent”).
Ex-1002	Patent Center Prosecution History of U.S. Patent No. 8,984,228.
Ex-1003	Declaration of Dr. Marwan Hassoun.
Ex-1004	Curriculum Vitae of Dr. Marwan Hassoun.
Ex-1005	U.S. Patent No. 7,805,575 to Agarwal et al. (“ <i>Agarwal</i> ”).
Ex-1006	B. Sinharoy et al., “IBM POWER7 Multicore Server Processor,” IBM Journal of Research and Development, vol. 5, no. 3, pp. 1:1-1:29 (2011) (“ <i>Sinharoy</i> ”).
Ex-1007	U.S. Patent Appl. Pub. No. 2011/0219188 to Blumrich et al. (“ <i>Blumrich</i> ”).
Ex-1008	U.S. Patent Appl. Publ. No. 2008/0126750 to Sistla (“ <i>Sistla</i> ”).
Ex-1009	<i>Multicore Processors and Systems</i> (S.W. Keckler et al. eds., 2009) (“ <i>Keckler</i> ”).
Ex-1010	U.S. Patent Appl. Pub. No. 2006/0041715 to Chrysos et al. (“ <i>Chrysos</i> ”).
Ex-1011	G. Blake et al., “A Survey of Multicore Processors,” IEEE Signal Processing Magazine, vol. 26, no. 6, pp. 26-37 (Nov. 2009) (“ <i>Blake</i> ”).
Ex-1012	V. Getov et al., “Codesign for Systems and Applications: Charting the Path to Exascale Computing,” Computer, vol. 44, no. 11, pp. 19-21 (Nov. 2011).
Ex-1013	T. Zhou, “Deriving Voltage Tolerance Specification for Processor Circuit Design,” 2011 IEEE 20th Conference on Electrical Performance of Electronic Packaging and Systems, pp. 17-20 (Oct. 2011).

<u>Exhibit</u>	<u>Description</u>
Ex-1014	Library of Congress Record: IBM Journal of Research and Development.
Ex-1015	MARC Record: IBM Journal of Research and Development.
Ex-1016	IBM Journal of Research and Development, vol. 5, no. 3 (2011).
Ex-1017	M.R. Marty, <i>Cache Coherence Techniques for Multicore Processors</i> , Ph.D. Dissertation, University of Wisconsin – Madison (2008) (“ <i>Marty</i> ”).
Ex-1018	Docket Control Order
Ex-1019	Infringement Contentions Cover
Ex-1020	IPR2023-01344 Paper 10 05/28/2024 Patent Owner’s Response
Ex-1021	IPR2023-01344 Paper 20 10/22/2024 Patent Owner’s Sur-reply
Ex-1022	Median Time To Trial
Ex-1023	Declaration of Kelley Hayes Greenfield
Ex-1024	Daedalus LPR 4-2 Terms

Issue preclusion applies to all Challenged Claims based upon the Board’s findings in IPR2023-01344, FWD, Paper 31 (January 24, 2025) (“FWD”). Each element of ‘228 patent claim 1 was present in ‘895 patent claim 1 held to be disclosed by the prior art:

‘895 patent Claim 1	‘228 patent Claim 1
1. A processor comprising: a plurality of cores, a shared cache memory, a memory controller to interface with a memory coupled to the processor, an integrated input/output (IIO) module to interface between the processor and an IO device coupled to the processor and a caching agent to perform cache coherency operations for the plurality of cores and the IIO module, wherein the processor is to receive an allocation transaction from the IO device and directly store data of the allocation transaction into the shared cache memory, wherein the caching agent is a single caching agent for the processor and includes a plurality of distributed portions each associated with a corresponding one of the plurality of cores.	1. An apparatus comprising: a multicore processor including a plurality of cores, a shared cache memory, an integrated input/output (IIO) module to interface between the multicore processor and at least one IO device coupled to the multicore processor, and a caching agent to perform cache coherency operations for the plurality of cores and the IIO module, the caching agent a single caching agent for the multicore processor and including a plurality of distributed portions each associated with a corresponding one of the plurality of cores.

EX-1003, ¶¶47-48. The only term in the ‘228 patent, claim 1 not present in ‘895 patent’s claim 1 is “multicore” – which is the “plurality of cores.” “[P]atent claims need not be identical for issue preclusion to apply. ... Instead, the question is whether the differences between the claims ‘materially alter the question of invalidity.’ ... these patents use slightly different language to describe substantially the same invention.” *Apple Inc. v. Smart Mobile Techs. LLC*, No. 2024-1352,

2026 WL 160563, at *3 (Fed. Cir. Jan. 21, 2026) (quoting *Ohio Willow Wood Co. v. Alps S., LLC*, 735 F.3d 1333, 1342-43 (Fed. Cir. 2013)). “Our precedent does not limit collateral estoppel to patent claims that are identical. Rather, it is the identity of the *issues* that were litigated that determines whether collateral estoppel should apply.” *Ohio Willow Wood*, 735 F.3d 1342-43.

Issue preclusion applies when “(1) the issue is identical to one decided in the first action; (2) the issue was actually litigated in the first action; (3) resolution of the issue was essential to a final judgment in the first action; and (4) plaintiff had a full and fair opportunity to litigate the issue in the first action.” *Google LLC v. Hammond Dev. Int’l, Inc.*, 54 F.4th 1377, 1381 (Fed. Cir. 2022) (citations omitted).

Issue preclusion attaches when a PO does not appeal a losing FWD. *Power Integrations, Inc. v. Semiconductor Components Indus., LLC*, 926 F.3d 1306, 1311-12 (Fed. Cir. 2019). The FWD further gives rise to estoppel under 37 CFR 42.73(d) which prevents PO from taking action that is inconsistent with the FWD.

In IPR2023-01344, the PO did not appeal the FWD which contained: (1) a claim construction, (2) factual findings that Sinharoy disclosed the “single caching agent” element; and (3) factual findings that Sinharoy and the other prior art disclosed the elements in the ‘895 patent claims challenged. Although the FWD had not issued when Petitioner filed the present IPR (*see* Petition at 1, n. 1), the FWD subsequently issued, was not appealed, and precludes PO from collaterally

challenging those rulings in this present IPR. The Board should not allow PO to take a second bite at the apple when PO elected to not appeal the FWD to the Federal Circuit. The basic principles of issue preclusion apply and the Challenged Claims are all invalid under those principles because the Board found that the prior art discloses the claim elements in the Challenged Claims of the '228 patent.

I. The Board Should Reject PO's Attempt To Impose Additional Restrictions On The Claim Construction Of "Single Caching Agent...."

The Board's ID preliminarily adopted the construction that the Board applied in the IPR2023-01344 FWD (at 18). ID, 14-15. The Patent Owner's Response ("POR") cited the Board's construction, but sought to impose further restrictions on the Board's construction. POR, 5-6; EX-2006, ¶33. PO's further restrictions re-argue its losing position from IPR2023-01344 that, in Sinharoy, "[e]ach L3 region has its own controller ... confirming per-region controllers." POR, at 36. The Board rejected PO's additional restrictions in the FWD:

We also find Petitioner's argument that the L2 and L3 caches form a "logical single caching agent" persuasive based on the present record. Patent Owner's responsive argument continues its argument that the two cache regions have separate cache controllers. However, that each cache region has a separate controller does not mean that the cache regions are separate or independent. The claim term is "single caching agent," not a single cache controller, and the "single caching agent" "includes a plurality of distributed portions associated with a

corresponding one of the plurality of cores” like each of Sinharoy’s local L3 regions that share capacity, data flow logic, and control flow logic with one another and their associated L2 cache for a particular core. IPR2023-01344, FWD at 27-28. The Board should reject PO’s attempt to re-write the Board’s prior claim construction to include concepts that the Board’s FWD rejected. First, issue preclusion bars PO from re-litigating to add this additional claim gloss. Second, the claim language and intrinsic record do not support PO’s position for the reasons that the Board rejected PO’s position in the FWD.

During the hearing in the present IPR, the Board correctly challenged PO as to whether the “single caching agent” was a “logical” agent. The “logical” reflects the analysis in the FWD quoted above. The claimed “single caching agent” can be a “logical single caching agent” as the Board discussed, and held, in IPR2023-01344. FWD, 27. The “logical” terminology reflects the distributed portions act to manage the overall shared cache (the entire shared cache) collectively as shown in Figure 6 of the ‘228 patent. Petitioner agrees with the Board’s construction and the application (including the Board’s analysis of Sinharoy’s “logical single caching agent”) in IPR2023-01344. Any additional restrictions that PO seeks to apply are improper and precluded.

II. The Board’s Factual Finding That Sinharoy Discloses The “Single Caching Agent” Estops PO From Relitigating That Issue

The Board’s prior determination that the prior art discloses the “single

“single caching agent” element precludes PO from re-litigating that factual issue. “Under traditional principles of issue preclusion, however, a party may be bound not simply by the ultimate conclusion (e.g., unpatentability of a claim), but by any subsidiary factual determinations that were actually litigated and essential to the judgment.” *Mobile Tech, Inc. v. Invue Sec. Prods. Inc.*, No. IPR2018-00481, 2019 WL 3208477, at *7 (P.T.A.B. July 16, 2019) (citing *Stephen Slesinger, Inc. v. Disney Enters., Inc.*, 702 F.3d 640, 644 (Fed. Cir. 2012)). Collateral estoppel can be used to show that individual limitations are disclosed in the prior art. *T-Mobile Usa, Inc. v. Dali Wireless Inc.*, No. IPR2022-01345, 2024 WL 967754, at *18 (P.T.A.B. Mar. 6, 2024) (“collateral estoppel [*sic*] precludes Patent Owner from arguing that Wu does not disclose the claimed ‘digital access unit is configured to send a digital representation of ... radio resources.’”). Collateral estoppel may apply even if the prior art differs. *Amazon.com, Inc. v. M2m Sols. LLC*, No. IPR2019-01204, 2021 WL 203148, at *23 (P.T.A.B. Jan. 20, 2021) (citing and discussing *Maxlinear, Inc. v. CF Crespe LLC*, 880 F.3d 1373, 1375-78 (Fed. Cir. 2018)); *Alphatec Holdings, Inc. v. Nuvasive, Inc.*, No. IPR2019-00361, 2020 WL 3865617, at *12 (P.T.A.B. July 8, 2020).

The four prongs of issue preclusion apply to the ‘228 claims. First, the “single caching agent” term is “substantially the same” – as the Board recognized. ID, 14 at n. 7; Ex-1003, ¶¶47-48 (comparing claims). For prongs 2-4 of issue

preclusion, this issue (Sinharoy disclosing the “single caching agent...”) was litigated, was essential to the judgment, and that PO had a full and fair opportunity to litigate the issue. IPR2023-01344, FWD at 23-28; IPR2023-01344, POR, Paper 10 at 7-8, 15-23 (May 28, 2024); IPR2023-01344, PO Sur-Reply, Paper 20 at 1-10 (October 22, 2024); IPR2023-01344, Transcript, Paper 30 (December 17, 2024) (referencing “single caching agent” seventy-five times).

The POR’s sole argument against Sinharoy for Claim 1 of the ‘228 patent was PO’s “single caching agent” reprise of losing arguments in IPR2023-01344. POR, 35-37. Thus, because PO is precluded from re-litigating that factual issue (that Sinharoy discloses the “single caching agent...”), PO does not present any cognizable challenge to claim 1 and the Board should hold it invalid.

III. The Board’s Factual Findings In IPR2023-01344 That Sinharoy Discloses All Elements Of The Challenged Claims Of The ‘895 Patent Estops PO From Re-Litigating Those Same Claim Elements In The ‘228 Patent.

Issue preclusion applies to all claim elements in the ‘228 patent that were held to be disclosed by Sinharoy in IPR2023-01344. The table below maps the ‘228 claim elements against elements that are substantively the same in the ‘895 claims held invalid in IPR2023-01344 and disclosed by the prior art.

‘228 Claim	‘895 Claim	Citations To IPR2023-01344 FWD As Being Disclosed By Sinharoy
1	1	FWD, 19-28 (Sinharoy disclosed all elements of claim 1)
2	3	FWD, 29 (“claim[] 3” anticipated or obvious over Sinharoy)
3	4	FWD, 29 (“claim[] 4” anticipated or obvious over Sinharoy)

4	5	FWD, 29 (“dependent claims 3–7, 12, 13, 16, and 17 were anticipated by or would have been obvious over Sinharoy.”)
5	10	FWD, 30-31 (“claims 2 and 10 would have been obvious over the combination of Sinharoy and Xu.”)
6	1	FWD, 23 (“we find Petitioner demonstrates that limitation 1f of claim 1 is disclosed, taught, or suggested by Sinharoy.”)
7	6	FWD, 29 (“claims 3–7” anticipated or obvious over Sinharoy)
11	11	FWD, 29 (“claims 11 and 15 were anticipated by or would have been obvious over Sinharoy.”)
12	12	FWD, 29 (“claim[] 12” anticipated or obvious over Sinharoy)
13	13	FWD, 29 (“claim[] 13” anticipated or obvious over Sinharoy)
14	11	FWD at 29 (claim[] 11 anticipated or obvious over Sinharoy)
16	15	FWD at 29 (claim[] 15 anticipated or obvious over Sinharoy)
17	15	FWD at 29 (claim[] 15 anticipated or obvious over Sinharoy)
18	17	FWD, 29 (“claim[] 17” anticipated or obvious over Sinharoy)
19	1, 5, 10	FWD, 29, 30-31 (quoted above holding claims 1, 5, 10 invalid)

For each claim (and element) above, the four issue preclusion prongs apply.

The IPR2023-01344 record shows that the issues were the same (the elements were substantively the same), the issues were litigated, the resolution was essential to the final judgment (holding claims invalid based on findings that the prior art disclosed the element), and the PO had a fair and full opportunity to litigate (shown by FWD, POR, PO Sur-reply and oral argument transcript).

Thus, because the Board had specific findings holding that the prior art disclosed each element of the ‘228 Challenged Claims (shown in the table above), issue preclusion applies and the Challenged Claims should be held invalid.

Date: July 6, 2026

Respectfully submitted,

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CERTIFICATION OF PAGE COUNT

Pursuant to the Board's oral Order during the IPR trial hearing, Petitioners certify that the page count of Petitioner Arm Ltd's Issue Preclusion Brief (exclusive of any table of contents, table of authorities, mandatory notices under § 42.8, certificates of service and word count, and list of exhibits or claim listing) is 7 pages.

Dated: July 6, 2026

By: /s/Kevin Anderson
Kevin Anderson, Lead Counsel
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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.6(e) and 42.105(a), the undersigned certifies that on a copy of the foregoing Petitioner Arm Ltd's Issue Preclusion Brief were served by electronic means to counsel of record in the present IPR.

Date: July 6, 2026

By: /s/ Kevin Anderson
Kevin Anderson, Lead Counsel
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