

## PATENT ASSIGNMENT COVER SHEET

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 Stylesheet Version v1.2

EPAS ID: PAT4119835

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
MANISH GUPTA	10/21/2016
DAVID A. ROBERTS	10/19/2016
MITESH R. MESWANI	10/20/2016
VILAS SRIDHARAN	10/20/2016
STEVEN RAASCH	10/19/2016
DANIEL I. LOWELL	10/21/2016
<b>RECEIVING PARTY DATA</b>	
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<b>City:</b>	SUNNYVALE
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<b>Postal Code:</b>	94085
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	15331270
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<b>ATTORNEY DOCKET NUMBER:</b>	AMD-160076-US-NP
<b>NAME OF SUBMITTER:</b>	JOSHUA A. HAMBERGER
<b>SIGNATURE:</b>	/Joshua A. Hamberger/
<b>DATE SIGNED:</b>	10/28/2016

**Total Attachments: 8**

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**ASSIGNMENT OF PATENT RIGHTS**

This is an assignment of patent rights between inventor(s) Manish Gupta, David A. Roberts, Mitesh R. Meswani, Vilas Sridharan, Steven Raasch, and Daniel I. Lowell (hereinafter referred to as the "Inventor(s)") and Advanced Micro Devices, Inc., having a place of business at One AMD Place, Sunnyvale, California, USA (hereinafter referred to as the "Assignee").

WHEREAS, Inventor(s) are named as inventors in the patent application filed in the United States of America on October 21, 2016, entitled PERFORMANCE-AWARE AND RELIABILITY-AWARE DATA PLACEMENT FOR N-LEVEL HETEROGENEOUS MEMORY SYSTEMS, having application no. 15/331,270, and having a docket number of AMD-160076-US-NP (hereinafter referred to as the "Application"); and

WHEREAS, Assignee has a desire to acquire all rights, title, and interest in the invention(s) disclosed in the Application (hereinafter referred to as the "Invention(s)"), including any rights, title, and interest in the Invention(s) not previously transferred to Assignee through prior agreement.

NOW, THEREFORE, the parties agree as follows:

1. To the extent that Inventor(s) are subject to a prior agreement transferring rights, title, and/or interest in the Invention(s) to the Assignee, Inventor(s) hereby confirm such transfer.
2. To the extent that Inventor(s) retain any rights, title, or interest in the Invention(s) not vested in the Assignee on the date(s) of execution of this Assignment, Inventor(s) hereby assign and otherwise transfer to the Assignee their entire right, title, and interest, throughout the world, in and to: the Invention(s), including any patent applications, patents, invention registrations, and equivalents thereof (including any and all provisional, international, regional, and national patents and patent applications, and all divisions, continuations, continuations-in-part, renewals, reissues, reexams, substitutes and extensions thereof), for the Invention(s) and all rights to claim priority thereto. Inventor(s) further assign and otherwise transfer to Assignee all causes of action and

remedies arising under any patent or patent application for the Invention(s) prior to, on, or after the date(s) of execution of this Assignment. Inventor(s) shall not be entitled to an accounting for any causes of action or remedies pursued by Assignee.

3. The transfers set forth in Paragraphs 1 and 2 above are in consideration for the sum of at least one U.S. dollar (US\$1) (or its equivalent) and/or other consideration for which both parties acknowledge to be valuable. Such consideration includes but is not limited to at least one of the following: employment, an independent contractor agreement, monetary payment, or other benefit hereby acknowledged as received.

4. Inventor(s) hereby authorize and request the Commissioner of Patents and Trademarks, or equivalent thereof, to issue the patent for the Invention, and all resulting patents therefrom, insofar as the Inventor(s)' interest is concerned, to the Assignee.

5. Inventor(s) further agree to execute any and all powers of attorney, applications, assignments, declarations, affidavits, and any other papers in connection therewith necessary to perfect Assignee's rights, title, and interest in the Invention(s).

6. Inventor(s) hereby authorize Assignee, its successors and assigns, its legal representatives, or anyone the Assignee may properly designate, to insert in this Assignment of Patent Rights the filing date and/or application number of the Application when ascertained.

7. Inventor(s) hereby further agree to, with respect to any patent application or patent for the Invention(s), at the expense of the Assignee:

- i) testify in any legal proceedings,
- ii) sign all lawful papers,
- iii) execute all divisional, continuation, continuation-in-part, reissue, reexamination, and substitute applications,
- iv) make all lawful oaths, and assist in vesting title in the Assignee and to aid the Assignee to obtain and enforce proper protection for the subject matter of the Invention(s) in all countries and regions, and
- v) notify Assignee promptly (by facsimile or first class mail) of any subpoena or contact by any person other than Assignee or its agents regarding the Invention or resultant patent(s) issuing therefrom, and in any event at least one week prior to any deposition, legal inquiry or legal proceeding relating to the above identified invention.

This assignment is executed on the date(s) of which the Inventor(s) have signed.

Inventor: Manish Gupta

Manish (Signature) Oct 21, 2016 (Date)  
MANISH GUPTA (Print Name)


Witness # 1:

[Signature] (Signature) Oct 21<sup>st</sup> 2016 (Date)  
DIMITAR A. BOUNOV (Print Name)

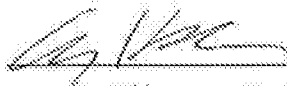
Witness # 2:

[Signature] (Signature) Oct 21 2016 (Date)  
VAHIDEH AKHLAGHI (Print Name)

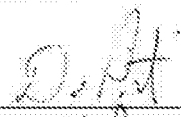
Inventor: David A. Roberts

 (Signature) 10/19/2016 (Date)  
DAVID ROBERTS (Print Name)

Witness # 1:

 (Signature) 10/19/2016 (Date)  
Elliot Mednick (Print Name)

Witness # 2:

 (Signature) 10/19/2016 (Date)  
David Panariti (Print Name)

Inventor: Mitesh R. Meswani

M. R. Meswani (Signature) 10/20/2016 (Date)  
Mitesh Meswani (Print Name)

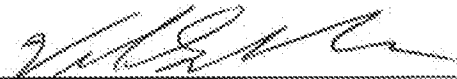
Witness # 1:

[Signature] (Signature) 10/20/2016 (Date)  
ERBANDDEEP S SACHDEV (Print Name)

Witness # 2:

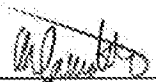
Blaine D. Haith (Signature) 10/20/2016 (Date)  
Blaine Haith (Print Name)

Inventor: Vilas Sridharan

 (Signature)  
VILAS SRIDHARAN (Print Name)


10/20/2016 (Date)

Witness # 1:

 (Signature)  
John Kalamandis (Print Name)

10/20/2016 (Date)


Witness # 2:

 (Signature)  
David Panariti (Print Name)


10/20/2016 (Date)




Inventor: Steven Raasch

 (Signature) 10-19-2016 (Date)  
Steven Raasch (Print Name)

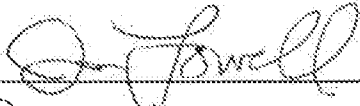
Witness # 1:

 (Signature) 10/19/2016 (Date)  
David Parviti (Print Name)

Witness # 2:

 (Signature) 10/19/2016 (Date)  
John Kalamitianos (Print Name)

Inventor: Daniel I. Lowell

 (Signature) 10/21/2016 (Date)  
DANIEL LOWELL (Print Name)

State of: TEXAS  
 County of: TRAVIS

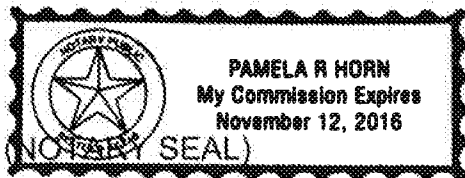
On OCTOBER 21, 2016 before me,  
 (insert date)

PAMELA R. HORN, NOTARY PUBLIC IN + FOR THE STATE OF TEXAS  
 (insert name and title of the notarizing officer)

personally appeared DANIEL LOWELL  
 who proved to me on the basis of satisfactory evidence to be the person(s) whose  
 name(s) is/are subscribed to the within instrument and acknowledged to me that  
 he/she/they executed the same in his/her/their authorized capacity(ies), and that by  
 his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of  
 which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of TEXAS  
 that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.



Signature: 