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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
61/186,799	06/12/2009		270	NETL.062PR		

CONFIRMATION NO. 1666

UPDATED FILING RECEIPT

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614



OC000000037947580

Date Mailed: 09/25/2009

Receipt is acknowledged of this provisional patent application. It will not be examined for patentability and will become abandoned not later than twelve months after its filing date. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Hyun Lee, Ladera Ranch, CA;

Power of Attorney:

Bruce Itchkawitz--47677

If Required, Foreign Filing License Granted: 06/17/2009

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 61/186,799**

Projected Publication Date: None, application is not eligible for pre-grant publication

Non-Publication Request: No

Early Publication Request: No

Title

METHOD OF PROVIDING HANDSHAKING BETWEEN A MEMORY CONTROLLER HUB AND A
MEMORY SUBSYSTEM

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international

page 1 of 3

Samsung Electronics Co., Ltd.

Ex. 1008, p. 1

patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

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Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and

Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

Please Direct All Correspondence to Customer Number 20995

TRANSMITTAL LETTER
PROVISIONAL APPLICATION MISSING PARTS

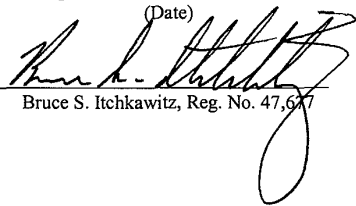
Applicant : Hyun Lee
App. No : 61/186799
Filed : June 12, 2009
For : METHOD OF PROVIDING
HANDSHAKING BETWEEN A
MEMORY CONTROLLER HUB
AND A MEMORY SUBSYSTEM

CERTIFICATE OF EFS WEB TRANSMISSION

I hereby certify that this correspondence, and any other attachment noted on the automated Acknowledgement Receipt, is being transmitted from within the Pacific Time zone to the Commissioner for Patents via the EFS Web server on:

September 22, 2009

(Date)


Bruce S. Itchkawitz, Reg. No. 47,677

Mail Stop MISSING PARTS

Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Notice to File Missing Parts of Provisional Application, which was mailed by the Office on June 22, 2009, enclosed are:

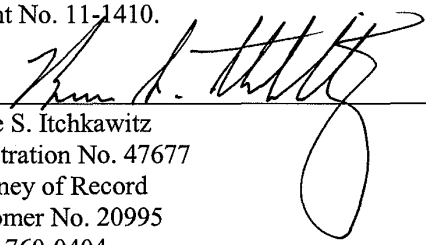
(X) A Supplemental Application Data Sheet in 3 pages.

FEE CALCULATION:

FEE CALCULATION				
FEE TYPE		FEE CODE	CALCULATION	TOTAL
Late Fee or Cover Sheet	1.16(g)	1052 (\$50)		\$50
1 Month Extension	1.17(a)(1)	1251 (\$130)		\$130
			TOTAL FEE DUE	\$180

(X) Fees will be paid via EFS Web. Extension of time is requested by payment of any extension fee.

The Commissioner is hereby authorized to charge any additional fees which may be required, now or in the future, or credit any overpayment, to Account No. 11-1410.


Bruce S. Itchkawitz
Registration No. 47677
Attorney of Record
Customer No. 20995
(949) 760-0404

SUPPLEMENTAL APPLICATION DATA SHEET**Application Information**

Application Number:: 61/186,799

Filing Date:: June 12, 2009

Application Type:: Provisional

Subject Matter:: Utility

Suggested Classification::

Suggested Group Art Unit::

CD-ROM or CD-R?::

Number of CD disks::

Number of copies of CDs::

Sequence Submission?:: No

Computer Readable Form (CRF)?::

Number of copies of CRF::

Title:: METHOD OF PROVIDING HANDSHAKING

BETWEEN A MEMORY CONTROLLER HUB AND A MEMORY SUBSYSTEM

Attorney Docket Number:: NETL.062PR

Request for Early Publication?:: No

Request for Non-Publication?:: No

Suggested Drawing Figure::

Total Drawing Sheets:: 1

Small Entity?:: No

Latin Name::

Variety Denomination Name::

Petition Included?::

Petition Type::

Licensed US Govt. Agency::

Contract or Grant Numbers::

1

Supplemental 61/186799 June 12, 2009 9/22/09

Secrecy Order in Parent Appl.?: No

Inventor Information

Applicant Authority Type:: Inventor
Primary Citizenship Country:: U.S.
Status:: US Residency
Given Name:: Hyun
Family Name:: Lee
City of Residence:: Ladera Ranch CA
State or Prov. of Residence:: CA
Country of Residence:: United States
Street:: 21 Thalia Street
City:: Ladera Ranch
State or Province:: CA
Country:: United States
Postal or Zip Code:: 92694

Correspondence Information

Correspondence Customer Number:: 20995
Phone Number:: (949) 760-0404
Fax Number:: (949) 760-9502
E-Mail Address:: efiling@kmob.com

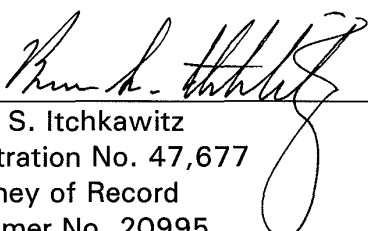
Representative Information

Representative Customer Number:: 20995

Assignment Information

Assignee Name:: NETLIST, Inc.
Street:: 51 Discovery, Suite #150
City:: Irvine
State or Province:: CA
Country:: United States
Postal or Zip Code:: 92618

Dated: September 22, 2009

By: 
Bruce S. Itchkawitz
Registration No. 47,677
Attorney of Record
Customer No. 20995
(949) 760-0404

7840925
092209

Electronic Patent Application Fee Transmittal				
Application Number:		61186799		
Filing Date:		12-Jun-2009		
Title of Invention:		METHOD OF PROVIDING HANDSHAKING BETWEEN A MEMORY CONTROLLER HUB AND A MEMORY SUBSYSTEM		
First Named Inventor/Applicant Name:				
Filer:		Bruce S. Itchkawitz/Nadin Hamoui		
Attorney Docket Number:		NETL.062PR		
Filed as Large Entity				
Provisional Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Late provisional filing fee/cover sheet	1052	1	50	50
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension - 1 month with \$0 paid	1251	1	130	130
Miscellaneous:				
Total in USD (\$)				180

Electronic Acknowledgement Receipt	
EFS ID:	6122939
Application Number:	61186799
International Application Number:	
Confirmation Number:	1666
Title of Invention:	METHOD OF PROVIDING HANDSHAKING BETWEEN A MEMORY CONTROLLER HUB AND A MEMORY SUBSYSTEM
First Named Inventor/Applicant Name:	
Customer Number:	20995
Filer:	Bruce S. Itchkawitz/Chelsea Pearsall
Filer Authorized By:	Bruce S. Itchkawitz
Attorney Docket Number:	NETL.062PR
Receipt Date:	22-SEP-2009
Filing Date:	12-JUN-2009
Time Stamp:	18:35:58
Application Type:	Provisional

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$180
RAM confirmation Number	4951
Deposit Account	111410
Authorized User	KNOBBE MARTENS OLSON AND BEAR
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		NETL062PRMPResponse.pdf	125965 c5f139fe8c3ffb1f161851273e86364c5cd9b775	yes	4
	Multipart Description/PDF files in .zip description				
	Document Description	Start	End		
	Applicant Response to Pre-Exam Formalities Notice	1	1		
	Application Data Sheet	2	4		
Warnings:					
Information:					
2	Fee Worksheet (PTO-875)	fee-info.pdf	32621 6ddbfaf8f92d2aab6e158c0c64e64b622ec64b42d	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			158586		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
61/186,799	06/12/2009		220	NETL.062PR		

CONFIRMATION NO. 1666

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

FILING RECEIPT



OC000000036529137

Date Mailed: 06/22/2009

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Applicant(s)

Power of Attorney:

Bruce Itchkawitz--47677

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Projected Publication Date: None, application is not eligible for pre-grant publication

Non-Publication Request: No

Early Publication Request: No

Title

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
61/186,799	06/12/2009		NETL.062PR

CONFIRMATION NO. 1666

FORMALITIES LETTER

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614



Date Mailed: 06/22/2009

NOTICE TO FILE MISSING PARTS OF PROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(c)

Filing Date Granted

An application number and filing date have been accorded to this provisional application. The items indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The provisional application cover sheet under 37 CFR 1.51(c)(1), which may be an application data sheet (37 CFR 1.76), is required identifying:
 - the name(s) of the inventor(s).
 - either city and state, or city and foreign country, of the residence of each inventor.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- To avoid abandonment, a surcharge (for late submission of filing fee or cover sheet) as set forth in 37 CFR 1.16(g) of **\$50** for a non-small entity, must be submitted with the missing items identified in this notice.

SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is **\$50** for a non-small entity

- **\$50** Surcharge.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.

<https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at <http://www.uspto.gov/ebc>.

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/schin/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Provisional Application COVER SHEET	Attorney Docket No.: NETL.062PR First Named Inventor: Unknown Title: METHOD OF PROVIDING HANDSHAKING BETWEEN A MEMORY CONTROLLER HUB AND A MEMORY SUBSYSTEM
	Date: June 12, 2009 Page 1 of 1
Direct all correspondence to Customer No.: 20995	

Commissioner for Patents
 P.O. Box 1450
 Alexandria, VA 22313-1450

The following enclosures are transmitted herewith to be filed in the Provisional Patent Application of:

APPLICATION ELEMENTS:

- (X) Specification in 3 pages.
- (X) Drawings in 1 sheet.

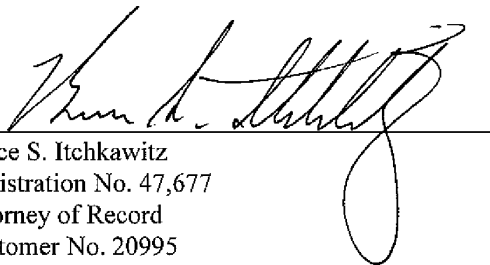
FILING FEES:

FEE CALCULATION				
FEE TYPE		LARGE FEE	CALCULATION	TOTAL
Basic Filing	37 CFR § 1.16(d)	1005 (\$220)		\$220
			TOTAL FEE DUE	\$220

(X) The amount of \$220 will be paid via EFS web.

This invention WAS NOT made by an agency of the United States Government or under a contract with an agency of the United States Government.

Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Account No. 11-1410.



 Bruce S. Itchkawitz
 Registration No. 47,677
 Attorney of Record
 Customer No. 20995
 (949) 760-0404

7283384
 061209

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	NETL.062PR
		Application Number	
Title of Invention	METHOD OF PROVIDING HANDSHAKING BETWEEN A MEMORY CONTROLLER HUB AND A MEMORY SUBSYSTEM		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2

☐	Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
--------------------------	---

Applicant Information:

Applicant 1				
Applicant Authority ☒ Inventor		☐ Legal Representative under 35 U.S.C. 117		☐ Party of Interest under 35 U.S.C. 118
Prefix	Given Name	Middle Name	Family Name	Suffix
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service				
City		State/Province	Country of Residence	
Citizenship under 37 CFR 1.41(b)				
Mailing Address of Applicant:				
Address 1				
Address 2				
City		State/Province		
Postal Code		Country		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.				

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).	
☐ An Address is being provided for the correspondence information of this application.	
Customer Number	20995
Email Address	efiling@kmb.com
	Add Email Remove Email

Application Information:

Title of the Invention	METHOD OF PROVIDING HANDSHAKING BETWEEN A MEMORY CONTROLLER HUB AND A MEMORY SUBSYSTEM		
Attorney Docket Number	NETL.062PR	Small Entity Status Claimed	☐
Application Type	Provisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	1	Suggested Figure for Publication (if any)	

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	NETL.062PR
		Application Number	
Title of Invention	METHOD OF PROVIDING HANDSHAKING BETWEEN A MEMORY CONTROLLER HUB AND A MEMORY SUBSYSTEM		

Publication Information:

☐	Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐	Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

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Prior Application Status		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
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Assignee Information:

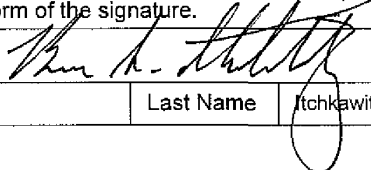
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	NETL.062PR
		Application Number	
Title of Invention	METHOD OF PROVIDING HANDSHAKING BETWEEN A MEMORY CONTROLLER HUB AND A MEMORY SUBSYSTEM		

If the Assignee is an Organization check here. ☐				
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Signature			Date (YYYY-MM-DD)	2009-06-12	
First Name	Bruce	Last Name	Itchkawitz	Registration Number	47677

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METHOD OF PROVIDING HANDSHAKING BETWEEN A MEMORY
CONTROLLER HUB AND A MEMORY SUBSYSTEM

Certain embodiments described herein provide a method of providing a feedback path from a memory subsystem to the MCH (Memory Controller Hub, e.g., system memory controller) during initialization.

In general, there is no method of handshaking between the MCH and a memory subsystem during initialization since the MCH does not monitor the error-out signal from the memory subsystem. This causes the MCH to perform blind execution. In a standard server (e.g., Intel or AMD or other chipset based), the lack of any handshaking between the MCH and the memory subsystem during the server initialization period has not been a serious issue since the MCH has a complete control over the initialization procedure. However, the recent proposal in JEDEC for LD-DIMM (Load Reduced DIMM) requires the MCH to hand over one or more parts of the initialization operation sequences to the memory subsystem controller, which raises an unprecedented issue to the MCH, and in such configurations, it needs a way of handshaking with the memory subsystem controller.

In general, handshaking can be implemented in two methods; polling and notifying. In the polling method, the MCH reads a status register in the memory subsystem controller to find out if the memory subsystem controller has completed the required operation. However, since the standard DDR2/3 specification does not provide a way to read any registers in the memory subsystem controller, this is not an implementable method. In the notifying method, the memory subsystem controller sends a signal to the MCH when it completes the required or requested operation. This method allows the MCH to execute independent command while it is waiting for a notification signaling for the memory subsystem controller.

Although the notifying method is an advantageous handshaking method between the MCH and the memory subsystem controller, the LR-DIMM proposal requires the MCH to insert a waiting period. The shortcoming of the current the LR-DIMM proposal is that, instead of adopting the notification, the proposal requires the MCH to be in

standby (idle, or wait) while the memory subsystem controller completes its task. Under this arrangement, since the standby duration is dependent on the density, speed and configuration of the memory subsystem, the MCH has to insert undefined standby period. In addition, if there are multiple occasions that the MCH needs to hand off its control to the memory subsystem controller, the required MCH wait periods can be different from one occasion to another, and it complicates the correlation between the MCH and the memory subsystem controller.

Certain embodiments described herein provide a method of establishing a handshake mechanism based on the notification signaling. This mechanism can be implemented by adding a new interface (notifying) signal between the MCH and the memory subsystem controller or by adding an additional functionality to an exiting, non-timing critical, signal without altering the memory subsystem hardware (refer to Figure 1). In either case, the interface of certain embodiments is an open drain signaling from the memory subsystem controller to the MCH (refer to Figure 2).

Figure 3 shows the operation of the notifying signal in accordance with an example embodiment. The output of the notifying signal is low impedance while the memory subsystem controller executing each section of the initialization step, thus the notifying signal is pulled low by the memory subsystem controller. As the memory controller completes each step, it drives the notifying signal pin to the high impedance state. This causes the signal to be pulled high by the MCH.

In certain embodiments in which more than one memory subsystem is connected to the MCH, each controller that associates with each memory subsystem drives the notifying signal pin to the high impedance state from the low impedance state when it completes the required operation. Thus, it provides the condition that the MCH can only pull the notifying signal high when all memory subsystem controllers are done with the required operation. This method allows the MCH to work with a non-homogenous memory subsystem, such as mixing of DIMMs with different DIMM density, ranks, DRAM density, speed, DRAM configuration, etc.

Although this method can be easily implemented by adding a pin to the MCH and to the memory subsystem controller, certain such embodiments would require change in hardware or the chipset, which, in many cases, is not feasible to do so. Thus, certain other

embodiments present another method of implementing this function without changing any hardware, but modifying the BIOS.

In the system point of view in accordance with certain embodiments, since the notification of completion of the required or requested task from the memory subsystem controller would generate an interrupt to the system during the initialization period as an error occurrence generates an interrupt to the system during the normal operation, the error-out signal in the current memory subsystem can be used to support the notifying function. Figure 4 shows an example of interrupt handling procedure for the error-handling routine vs. the notifying routine.

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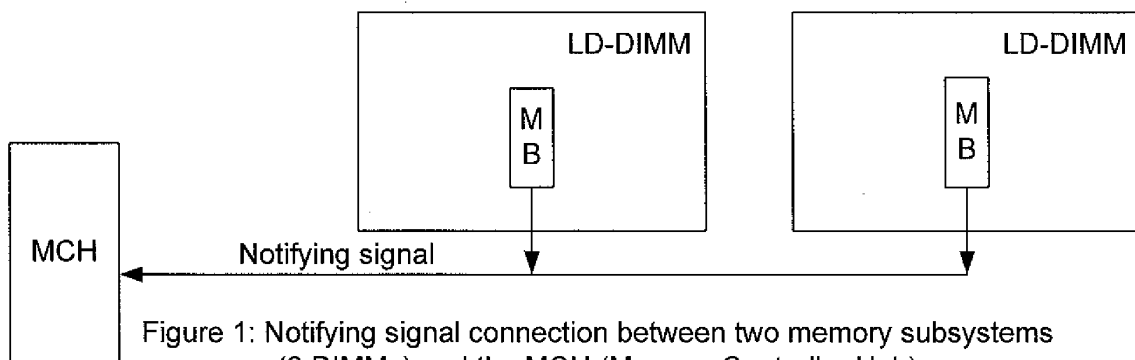


Figure 1: Notifying signal connection between two memory subsystems (2 DIMMs) and the MCH (Memory Controller Hub)

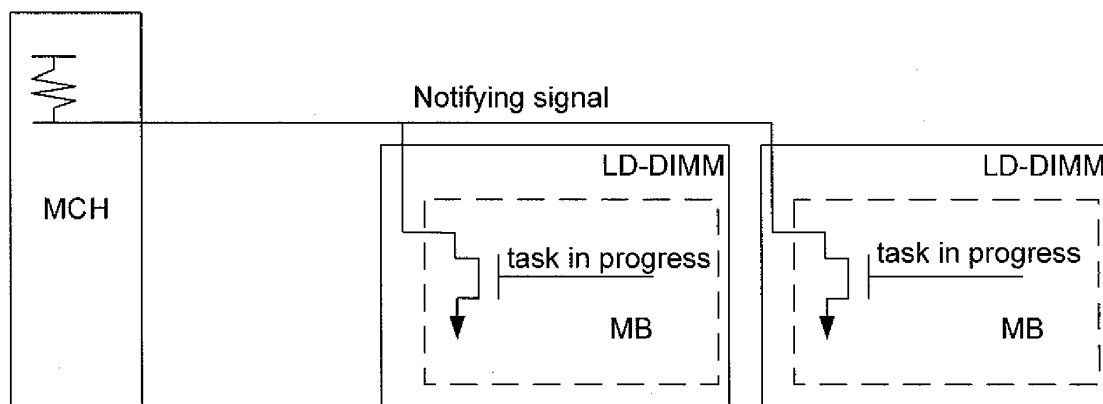


Figure 2: Notifying signal connection between two memory subsystems (2 DIMMs) using Open-Drain method

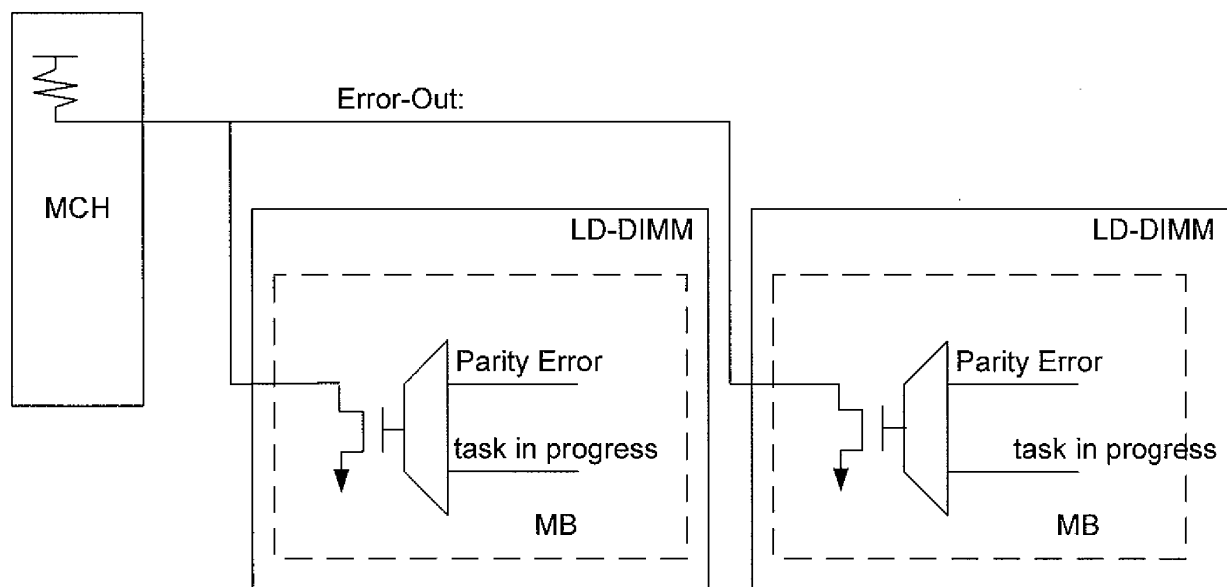


Figure 3: Sharing a pin between the Error-out and Notifying signal

Error-Out pin: Low during MB training (high signal indicates that training is done)
High during normal operation unless a parity error occurs

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		METHOD OF PROVIDING HANDSHAKING BETWEEN A MEMORY CONTROLLER HUB AND A MEMORY SUBSYSTEM		
First Named Inventor/Applicant Name:		Unknown Unknown		
Filer:		Bruce S. Itchkawitz		
Attorney Docket Number:		NETL.062PR		
Filed as Large Entity				
Provisional Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Provisional application filing	1005	1	220	220
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				220

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Application Number:	61186799
International Application Number:	
Confirmation Number:	1666
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First Named Inventor/Applicant Name:	Unknown Unknown
Customer Number:	20995
Filer:	Bruce S. Itchkawitz/Shirley Martinez
Filer Authorized By:	Bruce S. Itchkawitz
Attorney Docket Number:	NETL.062PR
Receipt Date:	12-JUN-2009
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Application Type:	Provisional

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			e23c91a3149ae20e64ea99b286ec8f4e041a59ff		
Warnings:					
Information:					
2	Application Data Sheet	ads.pdf	169974	no	4
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4	Drawings-only black and white line drawings	drawings.pdf	24280	no	1
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