

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT4504757

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
SANG-GU JO	06/28/2017
SUNG-EUN LEE	06/28/2017
JUNG-HYUN KWON	06/28/2017
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	SK HYNIX INC.
<b>Street Address:</b>	2091, GYEONGCHUNG-DAERO, BUBAL-EUB, ICHEON-SI
<b>City:</b>	GYEONGGI-DO
<b>State/Country:</b>	KOREA, REPUBLIC OF
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	15650460
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(571)327-5452
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
<b>Phone:</b>	571-327-5450
<b>Email:</b>	ipntlaw@ipntlaw.com
<b>Correspondent Name:</b>	IP & T GROUP LLP
<b>Address Line 1:</b>	8230 LEESBURG PIKE
<b>Address Line 2:</b>	SUITE 650
<b>Address Line 4:</b>	VIENNA, VIRGINIA 22182
<b>ATTORNEY DOCKET NUMBER:</b>	P16H0362/US
<b>NAME OF SUBMITTER:</b>	JUN JEONG PARK
<b>SIGNATURE:</b>	/Jun Jeong PARK/
<b>DATE SIGNED:</b>	07/14/2017
This document serves as an Oath/Declaration (37 CFR 1.63).	
<b>Total Attachments: 3</b>	
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source=P16H0362US-Assignment#page2.tif	
source=P16H0362US-Assignment#page3.tif	

Attorney Docket No.: \_\_\_\_\_

**ASSIGNMENT OF AND DECLARATION FOR APPLICATION  
FOR UNITED STATES LETTERS PATENT**

WHEREAS JO, Sang-Gu

hereinafter referred to collectively as the assignor and inventor, has invented a certain improvement relating to

MEMORY DEVICE, OPERATING METHOD THEREOF, AND OPERATING METHOD OF MEMORY SYSTEM  
INCLUDING THE SAME

[X] said application being attached hereto;

[ ] said application having been filed in the United States Patent and Trademark Office on

\_\_\_\_\_ as Application Serial No. \_\_\_\_\_ and was amended  
on \_\_\_\_\_ (if applicable);

[ ] the specification of which was filed under the Patent Cooperation Treaty on \_\_\_\_\_  
Serial No. \_\_\_\_\_ the United States of America being designated.

AND WHEREAS SK hynix Inc.

hereinafter referred to as the assignee or applicant, is desirous of acquiring the entire right, title and interest in and to said  
application, including any and all divisions and continuations thereof, and in and to said invention and any and all patents  
which may be granted therefor, including any and all renewals, reissues and prolongations thereof;

NOW THIS WITNESSETH, that for and in consideration of One Dollar (\$1.00), and other good and valuable  
consideration paid by said assignee to said assignor, the receipt of which is hereby acknowledged, said assignor hereby  
assigns, sells and transfers to said assignee, and said assignee's successors and assigns, the full and exclusive right, title and  
interest in and to said application, including any and all divisions and continuations thereof, and in and to said invention and  
any and all patents which may be granted therefor, including any and all renewals, reissues and prolongations thereof; said  
assignee, and said assignee's successors and assigns, to have, hold, exercise and enjoy the said application, including any and  
all divisions and continuations thereof, and the said invention and any and all patents which may be granted therefor,  
including any and all renewals, reissues and prolongations thereof, with all the rights, powers, privileges and advantages in  
anywise arising from or appertaining thereto, for and during the term or terms of any and all such patents when granted,  
including any and all renewals, reissues and prolongations thereof, for the use and benefit of said assignee, and said  
assignee's successors and assigns, in as ample and beneficial a manner as the said assignor might or could have held and  
enjoyed the same, if this assignment had not been made.

AND said assignor hereby agrees to perform, upon the request of said assignee, or said assignee's successors or  
assigns, any and all acts relating to the obtaining or to the asserting of said patents, including any and all renewals, reissues  
and prolongations thereof.

AND said assignor authorizes and requests the Commissioner of Patents and Trademarks to issue Letters Patent on  
said application, and on any and all divisions and continuations thereof, to said assignee, and said assignee's successors and  
assigns, in accordance herewith.

As an above-named inventor, I hereby declare that the above-identified application was made or authorized to be  
made by me, and that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001  
by fine or imprisonment of not more than five (5) years, or both.

ASSIGNOR (INVENTOR):

Signature: Jo Sang GuDate: 2017. 6. 28Printed or Typed Name: JO, Sang-Gu

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Attorney Docket No.: \_\_\_\_\_

**ASSIGNMENT OF AND DECLARATION FOR APPLICATION  
FOR UNITED STATES LETTERS PATENT**

WHEREAS LEE, Sung-Eun

hereinafter referred to collectively as the assignor and inventor, has invented a certain improvement relating to  
MEMORY DEVICE, OPERATING METHOD THEREOF, AND OPERATING METHOD OF MEMORY SYSTEM  
INCLUDING THE SAME

☒ said application being attached hereto;  
☐ said application having been filed in the United States Patent and Trademark Office on \_\_\_\_\_, as Application Serial No. \_\_\_\_\_ and was amended on \_\_\_\_\_ (if applicable);  
☐ the specification of which was filed under the Patent Cooperation Treaty on \_\_\_\_\_, Serial No. \_\_\_\_\_, the United States of America being designated.

AND WHEREAS SK hynix Inc.

hereinafter referred to as the assignee or applicant, is desirous of acquiring the entire right, title and interest in and to said application, including any and all divisions and continuations thereof, and in and to said invention and any and all patents which may be granted therefor, including any and all renewals, reissues and prolongations thereof;

NOW THIS WITNESSETH, that for and in consideration of One Dollar (\$1.00), and other good and valuable consideration paid by said assignee to said assignor, the receipt of which is hereby acknowledged, said assignor hereby assigns, sells and transfers to said assignee, and said assignee's successors and assigns, the full and exclusive right, title and interest in and to said application, including any and all divisions and continuations thereof, and in and to said invention and any and all patents which may be granted therefor, including any and all renewals, reissues and prolongations thereof; said assignee, and said assignee's successors and assigns, to have, hold, exercise and enjoy the said application, including any and all divisions and continuations thereof, and the said invention and any and all patents which may be granted therefor, including any and all renewals, reissues and prolongations thereof, with all the rights, powers, privileges and advantages in anywise arising from or appertaining thereto, for and during the term or terms of any and all such patents when granted, including any and all renewals, reissues and prolongations thereof, for the use and benefit of said assignee, and said assignee's successors and assigns, in as ample and beneficial a manner as the said assignor might or could have held and enjoyed the same, if this assignment had not been made.

AND said assignor hereby agrees to perform, upon the request of said assignee, or said assignee's successors or assigns, any and all acts relating to the obtaining or to the asserting of said patents, including any and all renewals, reissues and prolongations thereof.

AND said assignor authorizes and requests the Commissioner of Patents and Trademarks to issue Letters Patent on said application, and on any and all divisions and continuations thereof, to said assignee, and said assignee's successors and assigns, in accordance herewith.

As an above-named inventor, I hereby declare that the above-identified application was made or authorized to be made by me, and that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

ASSIGNOR (INVENTOR):

Signature: Lee, Sung-Eun Date: 2017. 6. 28

Printed or Typed Name: LEE, Sung-Eun

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Attorney Docket No.: \_\_\_\_\_

**ASSIGNMENT OF AND DECLARATION FOR APPLICATION  
FOR UNITED STATES LETTERS PATENT**

WHEREAS KWON, Jung-Hyun \_\_\_\_\_,

hereinafter referred to collectively as the assignor and inventor, has invented a certain improvement relating to

MEMORY DEVICE, OPERATING METHOD THEREOF, AND OPERATING METHOD OF MEMORY SYSTEM  
INCLUDING THE SAME

[X] said application being attached hereto;

[ ] said application having been filed in the United States Patent and Trademark Office on

\_\_\_\_\_ as Application Serial No. \_\_\_\_\_, and was amended  
on \_\_\_\_\_ (if applicable);

[ ] the specification of which was filed under the Patent Cooperation Treaty on \_\_\_\_\_,  
Serial No. \_\_\_\_\_, the United States of America being designated.

AND WHEREAS SK hynix Inc. \_\_\_\_\_,

hereinafter referred to as the assignee or applicant, is desirous of acquiring the entire right, title and interest in and to said  
application, including any and all divisions and continuations thereof, and in and to said invention and any and all patents  
which may be granted therefor, including any and all renewals, reissues and prolongations thereof;

NOW THIS WITNESSETH, that for and in consideration of One Dollar (\$1.00), and other good and valuable  
consideration paid by said assignee to said assignor, the receipt of which is hereby acknowledged, said assignor hereby  
assigns, sells and transfers to said assignee, and said assignee's successors and assigns, the full and exclusive right, title and  
interest in and to said application, including any and all divisions and continuations thereof, and in and to said invention and  
any and all patents which may be granted therefor, including any and all renewals, reissues and prolongations thereof; said  
assignee, and said assignee's successors and assigns, to have, hold, exercise and enjoy the said application, including any and  
all divisions and continuations thereof, and the said invention and any and all patents which may be granted therefor,  
including any and all renewals, reissues and prolongations thereof, with all the rights, powers, privileges and advantages in  
anywise arising from or appertaining thereto, for and during the term or terms of any and all such patents when granted,  
including any and all renewals, reissues and prolongations thereof, for the use and benefit of said assignee, and said  
assignee's successors and assigns, in as ample and beneficial a manner as the said assignor might or could have held and  
enjoyed the same, if this assignment had not been made.

AND said assignor hereby agrees to perform, upon the request of said assignee, or said assignee's successors or  
assigns, any and all acts relating to the obtaining or to the asserting of said patents, including any and all renewals, reissues  
and prolongations thereof.

AND said assignor authorizes and requests the Commissioner of Patents and Trademarks to issue Letters Patent on  
said application, and on any and all divisions and continuations thereof, to said assignee, and said assignee's successors and  
assigns, in accordance herewith.

As an above-named inventor, I hereby declare that the above-identified application was made or authorized to be  
made by me, and that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001  
by fine or imprisonment of not more than five (5) years, or both.

ASSIGNOR (INVENTOR):

Signature: Kwon, Jung-hyunDate: 2017. 6. 28Printed or Typed Name: KWON, Jung-Hyun

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