### 504297872 03/30/2017

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT4344553

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

#### **CONVEYING PARTY DATA**

Name	Execution Date
YOUNG-JUN KU	03/17/2017
DAE-SUK KIM	03/17/2017
JANG-RYUL KIM	03/17/2017
JONG-CHERN LEE	03/17/2017

### **RECEIVING PARTY DATA**

Name:	SK HYNIX INC.
Street Address:	2091, GYEONGCHUNG-DAERO, BUBAL-EUB, ICHEON-SI
City:	GYEONGGI-DO
State/Country:	KOREA, REPUBLIC OF

## **PROPERTY NUMBERS Total: 1**

Property Type	Number
Application Number:	15473907

### CORRESPONDENCE DATA

**Fax Number:** (571)327-5452

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.

**Phone:** 571-327-5450

Email: ipntlaw@ipntlaw.com
Correspondent Name: IP & T GROUP LLP

Address Line 1: 8230 LEESBURG PIKE SUITE 650

Address Line 4: VIENNA, VIRGINIA 22182

ATTORNEY DOCKET NUMBER:	P16H0184/US
NAME OF SUBMITTER:	JUN JEONG PARK
SIGNATURE:	/Jun Jeong PARK/
DATE SIGNED:	03/30/2017
	This document serves as an Oath/Declaration (37 CFR 1.63).

#### **Total Attachments: 4**

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Attorney Docket No.:	
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## ASSIGNMENT OF AND DECLARATION FOR APPLICATION FOR UNITED STATES LETTERS PATENT

WHEREAS KU, Young-Jun , hereinafter
referred to collectively as the assignor and inventor, has invented a certain improvement relating to
SEMICONDUCTOR DEVICE
[X] said application being attached hereto;
[ ] 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.
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AND said assignor authorizes and requests the Commissioner of Patents and Trademarks to issue Letters Patent or
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: KU Young Jun Date: 2017. 3.17
Signature:
Printed or Typed Name: KU, Young-Jun
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Attorney Docket No.:

ASSIGNMENT OF AND DECLARATION FOR APPLICATION FOR UNITED STATES LETTERS PATENT
WHEREAS KIM, Dae-Suk , hereinafter
referred to collectively as the assignor and inventor, has invented a certain improvement relating to
SEMICONDUCTOR DEVICE
[X] said application being attached hereto; [ ] said application having been filed in the United States Patent and Trademark Office on
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 assigner, the receipt of which is hereby acknowledged, said assigner 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 assigner 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: KZM Dar Sul Date: 2017. 3.17
Printed or Typed Name: KIM, Dae-Suk

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Attorney Docket No.:	Attorney	Docket No.:	
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# ASSIGNMENT OF AND DECLARATION FOR APPLICATION FOR UNITED STATES LETTERS PATENT

WHEREAS KIM, Jang-Ryul , hereinafter
referred to collectively as the assignor and inventor, has invented a certain improvement relating to
SEMICONDUCTOR DEVICE
[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 of assigns, any and all acts relating to the obtaining or to the asserting of said patents, including any and all renewals, reissue and prolongations thereof.  AND said assignor authorizes and requests the Commissioner of Patents and Trademarks to issue Letters Patent of said application, and on any and all divisions and continuations thereof, to said assignee, and said assignee's successors and assignee's successors and assignee, and said assignee's successors and assignee, and said assignee's successors and assignee, and said assigne
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. 100 by fine or imprisonment of not more than five (5) years, or both.
ASSIGNOR (INVENTOR):
Signature: Kin Jang Ryn Date: 2012, 3.19
Printed or Typed Name: KIM, Jang-Ryul
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Attorney Docket No .:	
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# ASSIGNMENT OF AND DECLARATION FOR APPLICATION FOR UNITED STATES LETTERS PATENT

WHEREAS LEE, Jong-Chern , hereinafter
referred to collectively as the assignor and inventor, has invented a certain improvement relating to
SEMICONDUCTOR DEVICE
[X] said application being attached hereto; [ ] said application having been filed in the United States Patent and Trademark Office on
on(if applicable); [ ] the specification of which was filed under the Patent Cooperation Treaty on,
[ ] 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 assigner, the receipt of which is hereby acknowledged, said assigner 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 Joy Cham Date: 2017.3.17
Printed or Typed Name: LEE, Jong-Chern
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SKhynis RECORDED: 03/30/2017