### 503456071 08/27/2015

### PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2

SUBMISSION TYPE: NEW ASSIGNMENT

NATURE OF CONVEYANCE: ASSIGNMENT

EPAS ID: PAT3502696

#### **CONVEYING PARTY DATA**

Name	Execution Date
KEUN DO BAN	08/17/2015
HONG IK KIM	08/17/2015
JUNG GUN HEO	08/17/2015
CHEOL KYU BOK	08/17/2015

#### **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:	14837913	

#### **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:	HYP15709/US
NAME OF SUBMITTER:	MYUNG SOO KIM
SIGNATURE:	/Myung Soo KIM/
DATE SIGNED:	08/27/2015
	This document serves as an Oath/Declaration (37 CFR 1.63).

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

source=Dec&Assignment#page1.tif source=Dec&Assignment#page2.tif source=Dec&Assignment#page3.tif

PATENT 503456071 REEL: 036441 FRAME: 0985

source=Dec&Assignment#page4.tif

PATENT REEL: 036441 FRAME: 0986

Attorney Docket No.: HYP15709/US

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

WHEREAS	BAN, Keun Do	, hereinafter referred to collectively as the assignor and inventor, has
invented a certain imp	rovement relating to	
***************************************	METH	ODS OF FORMING PATTERNS
on	ving been filed in the Unite as Applicate f which was filed under the	ed States Patent and Trademark Office on tion Serial No
hereinafter referred to application, including which may be granted	any and all divisions and c therefor, including any and WITNESSETH, that for	ont, is desirous of acquiring the entire right, title and interest in and to said continuations thereof, and in and to said invention and any and all patents d all renewals, reissues and prolongations thereof;  and in consideration of One Dollar (\$1.00), and other good and valuable
consideration paid by assigns, sells and tran interest in and to said any and all patents w assignee, and said ass all divisions and cor including any and all anywise arising from including any and all assignee's successors enjoyed the same, if the AND said a assigns, any and all a and prolongations the	r said assignee to said assigners to said assignee, and application, including any hich may be granted therefignee's successors and assigntinuations thereof, and the renewals, reissues and proof or appertaining thereto, fell renewals, reissues and proof and assigns, in as ample and assignment had not been assignor hereby agrees to posts relating to the obtaining treof.	signor, the receipt of which is hereby acknowledged, said assignor hereby said assignee's successors and assigns, the full and exclusive right, title and and all divisions and continuations thereof, and in and to said invention and for, including any and all renewals, reissues and prolongations thereof; said gns, to have, hold, exercise and enjoy the said application, including any and all estaid invention and any and all patents which may be granted therefor, olongations thereof, with all the rights, powers, privileges and advantages in for and during the term of terms of any and all such patents when granted, prolongations thereof, for the use and benefit of said assignee, and said and beneficial a manner as the said assigner might or could have held and in made.  Deterform, upon the request of said assignee, or said assignee's successors or go or to the asserting of said patents, including any and all renewals, reissues
AND said as said application, and assigns, in accordance	on any and all divisions ar	nests the Commissioner of Patents and Trademarks to issue Letters Patent on and continuations thereof, to said assignee, and said assignee's successors and
As an above made by me, and that	e-named inventor, I hereby I am the original inventor	declare that the above-identified application was made or authorized to be or an original joint inventor of a claimed invention in the application.
I hereby ack by fine or imprisonme	nowledge that any willful ent of not more than five (5	false statement made in this declaration is punishable under 18 U.S.C. 1001 by years, or both.
ASSIGNOR (INVEN	VTOR):	
Signature:	Ban Keun L	Date: 2015 - 8 - 1/1
Printed or Typed Na	ne:BA	AN, Keun Do

Page 1 of 4

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

Attorney Docket No.: HYP15709/US

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

WHEREAS	KIM, Hong Ik	, hereinaft	er referre	d to collectively as the assignor and inventor, has
invented a certain imp	rovement relating to			
	N	METHODS OF FOR	MING PA	ATTERNS
on	rving been filed in the as Ap	oplication Serial No. (if applical ler the Patent Coope I States of America I	ole); ration Tre being desi	, and was amended
hereinafter referred to application, including	as the assignee or ap any and all divisions	plicant, is desirous of and continuations to	of acquirin hereof, an	ng the entire right, title and interest in and to said d in and to said invention and any and all patents and prolongations thereof;
consideration paid by assigns, sells and tran interest in and to said any and all patents w assignee, and said ass all divisions and cor including any and all anywise arising from including any and all assignee's successors enjoyed the same, if the AND said a assigns, any and all a and prolongations the Said application, and assigns, in accordance As an above	r said assignee to sa sefers to said assignee application, includin hich may be granted ignee's successors and itinuations thereof, a renewals, reissues ar or appertaining ther all renewals, reissues and assigns, in as ar his assignment had no essignor hereby agree cts relating to the ob- reof.	id assignor, the rece, and said assignee's any and all division therefor, including divided assigns, to have, had the said invention prolongations therefor, for and during and prolongations mple and beneficial of been made.  It is to perform, upon taining or to the assigns and continuation and continuation and continuation are the said requests the Commons and continuation are the said assignment that the said assignment to the said assignment that the said assi	eipt of we successons and co any and a old, exercion and a reof, with the term thereof, a manner the requeering of successioner of the successioner of the above-	f One Dollar (\$1,00), and other good and valuable hich is hereby acknowledged, said assignor hereby ors and assigns, the full and exclusive right, title and outlineations thereof, and in and to said invention and all renewals, reissues and prolongations thereof; said itse and enjoy the said application, including any and and all patents which may be granted therefor, all the rights, powers, privileges and advantages in or terms of any and all such patents when granted, for the use and benefit of said assignee, and said as the said assigner might or could have held and set of said assignee, or said assignee's successors or said patents, including any and all renewals, reissues of Patents and Trademarks to issue Letters Patent on to said assignee, and said assignee's successors and didentified application was made or authorized to be not or of a claimed invention in the application.
I hereby ack by fine or imprisonme	nowledge that any went of not more than f	illful false statemen ive (5) years, or bot	t made in h.	this declaration is punishable under 18 U.S.C. 1001
ASSIGNOR (INVEN	ITOR):			
Signature:	Kim Hong	IK	Date: _	2015-8-17
Printed or Typed Nar	me:	KIM, Hong Ik		
		Page	2 of 4	

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

Attorney Docket No.: HYP15709/US

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

WHEREAS	HEO, Jung Gun	, hereinafter referred to collectively as the assignor and inventor, has
invented a certain imp	provement relating to	
	METHO	DDS OF FORMING PATTERNS .
on	aving been filed in the United as Application as Application f which was filed under the l	d States Patent and Trademark Office on on Serial No
hereinafter referred to application, including	any and all divisions and co	, is desirous of acquiring the entire right, title and interest in and to said ntinuations thereof, and in and to said invention and any and all patents all renewals, reissues and prolongations thereof;
consideration paid by assigns, sells and tran interest in and to said any and all patents wassignee, and said assall divisions and conincluding any and all anywise arising from including any and all assignee's successors enjoyed the same, if the AND said a	y said assignee to said assigners to said assignee, and sapplication, including any a hich may be granted therefore ignee's successors and assignationations thereof, and the renewals, reissues and professor appertaining thereto, for appertaining thereto, for all renewals, reissues and professor and assigns, in as ample-archis assignment had not been sesignor hereby agrees to pects relating to the obtaining	and in consideration of One Dollar (\$1.00), and other good and valuable gnor, the receipt of which is hereby acknowledged, said assigner hereby aid assignee's successors and assigns, the full and exclusive right, title and and all divisions and continuations thereof, and in and to said invention and or, including any and all renewals, reissues and prolongations thereof; said as, to have, hold, exercise and enjoy the said application, including any and said invention and any and all patents which may be granted therefor, or and during the term or terms of any and all such patents when granted, rolongations thereof, for the use and benefit of said assignee, and said ad beneficial a manner as the said assigner might or could have held and made.
AND said as said application, and assigns, in accordance	on any and all divisions and	sts the Commissioner of Patents and Trademarks to issue Letters Patent on continuations thereof, to said assignee, and said assignee's successors and
As an above made by me, and that	e-named inventor, I hereby of I am the original inventor or	leclare that the above-identified application was made or authorized to be an original joint inventor of a claimed invention in the application.
	nowledge that any willful faent of not more than five (5)	alse statement made in this declaration is punishable under 18 U.S.C. 1001 years, or both.
ASSIGNOR (INVEN	TTOR):	
Signature:	Heo Juny Gui	Date: 2015-8-17
Printed or Typed Nar	ne: HEO, Jung G	Page 3 of 4

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

Attorney Docket No.: HYP15709/US

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

WHEREAS	BOK, Cheol Kyu	, hereinafter referred	to collectively as the a	ssignor and inventor, has
invented a certain impr				
	METHOD	S OF FORMING PATI	ERNS	
on	oing attached hereto; ving been filed in the United S, as Application which was filed under the Pa, the United States of	Serial No (if applicable); tent Cooperation Treaty	on	, and was amended ,
application, including which may be granted  NOW THIS consideration paid by assigns, sells and transinterest in and to said	SK hynix Inc. as the assignee or applicant, is any and all divisions and cont therefor, including any and all WITNESSETH, that for and said assignee to said assignee fers to said assignee, and said application, including any and ich may be granted therefor,	inuations thereof, and in I renewals, reissues and in consideration of Or or, the receipt of which d assignee's successors and divisions and conting including any and all r	and to said invention a prolongations thereof; ne Dollar (\$1.00), and it is hereby acknowled and assigns, the full and mations thereof, and in enewals, reissues and p	other good and valuable ged, said assignor hereby d exclusive right, title and and to said invention and prolongations thereof; said
assignee, and said assignee, and said assigned any and all anywise arising from including any and all assignee's successors enjoyed the same, if the AND said as	gnee's successors and assigns tinuations thereof, and the s renewals, reissues and prolon or appertaining thereto, for all renewals, reissues and pro and assigns, in as ample and his assignment had not been make a signor hereby agrees to perfects relating to the obtaining of	aid invention and any gations thereof, with all und during the term or longations thereof, for beneficial a manner as ade.	and enjoy the said appland all patents which the rights, powers, priterms of any and all state use and benefit of the said assignor might	may be granted therefor, ivileges and advantages in uch patents when granted, of said assignee, and said ht or could have held and dassignee's successors or
AND said as said application, and assigns, in accordance	signor authorizes and request on any and all divisions and o e herewith.	s the Commissioner of I continuations thereof, to	Patents and Trademarks said assignee, and said	s to issue Letters Patent on d assignee's successors and
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 ack by fine or imprisonme	nowledge that any willful falsent of not more than five (5) year	se statement made in thi ears, or both.	s declaration is punisha	able under 18 U.S.C. 1001
ASSIGNOR (INVEN	(TOR):			
Signature:	wykyr 1 M	Date:	2015-8-11	~
Printed or Typed Nar	me: BOK,	Cheol Kyu		
		Page 4 of 4		