PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT4970238

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
SUNG-JOO YOO	02/01/2018
MUN-GYU SON	02/06/2018

RECEIVING PARTY DATA

Name:	SK HYNIX INC.	
Street Address:	2091, GYEONGCHUNG-DAERO, BUBAL-EUB, ICHEON-SI	
City:	GYEONGGI-DO	
State/Country:	e/Country: KOREA, REPUBLIC OF	
Name:	SEOUL NATIONAL UNIVERSITY R&DB FOUNDATION	
Name: Street Address:	SEOUL NATIONAL UNIVERSITY R&DB FOUNDATION 1, GWANAK-RO, GWANAK-GU	

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	15984858

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:	P17H0110/US	
NAME OF SUBMITTER:	MYUNG SOO KIM	
SIGNATURE:	/Myung Soo KIM/	
DATE SIGNED:	05/21/2018	
	This document serves as an Oath/Declaration (37 CFR 1.63).	

Total Attachments: 2

PATENT REEL: 045860 FRAME: 0977

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PATENT REEL: 045860 FRAME: 0978

ASSIGNMENT OF AND DECLARATION FOR APPLICATION FOR UNITED STATES LETTERS PATENT
WHEREAS YOO Sung-Joo heremafter
referred to collectively as the assignor and inventor, has invented a certain improvement relating to
CIRCUIT FOR SELECTING ROW TO BE REFRESHED
[X] said application being attached heretu; [] said application having been filed in the United States Patent and Trademark Office on
with the Conted States of America being designated.
AND WHEREAS SK hynix Inc. and Seoul National University R&DB Foundation 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 communitions 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 assigners successors and assigns in an 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 potents, including any and all renewals, relasues and prolongations thereof.
AND said assignor authorizes and requests the Commissioner of Parents 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 assigne, in accordance horizonth.
As an above-named overtim, I hereby doctare 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.
Therefore assemble due and wellful false extensest made in this declaration is punishable under 18 U.S.C. 1001 by line or improvement of not more than five (5) years, or both.
ASSIGNOR (INVENTION):
Signature

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Attorney Docket No.:

PATENT REEL: 045860 FRAME: 0979

			Attorney Docket No.:
		AND DECLARATION FOR AP ITED STATES LETTERS PATE	
WHEREAS	SON, Mun-Gyu		, hereinafter
		tor, has invented a certain improve	
CIRCUIT FOR SE	LECTING ROW TO BE REI	RESHED	
on [] the specification	n being attached hereso; n having been filed in the Uni as Applicat n of which was filed under the	ted States Patent and Trademark O tion Serial No. (if applicable); Patent Cooperation Treaty on s of America being designated.	ffice on and was amended
AND WHERE hereinafter referred application, includ-	AS <u>SK livnix Inc. and Sc</u> I to as the assignee or applicar ing any and all divisions and c	cul National University R&DB	e right, title and interest in and to said said invention and any and all patents
consideration paid assigns, sells and to interest in and to se any and all patents assignee, and said all divisions and of including any and anywise arising fromcluding any and assignee's successor	by said assignee to said assignee, and assignee, and application, including any which may be granted there! assignee's successors and assignee's successors and assignee's research, and the all renewals, reissues and proom or appertaining thereto, fe all renewals, reissues and pro-	ignor, the receipt of which is here said assignee's successors and assigned and all divisions and continuations for, including any and all renewals, gas, to have, hold, exercise and enjoy as said invention and any and all plongations thereof, with all the righer and during the term or terms of prolongations thereof, for the use and beneficial a manner as the said	ar (\$1.00), and other good and valuable by acknowledged, said assignor hereby gos, the full and exclusive right, title and thereof, and in and to said invention and reissues and prolongations thereof; said by the said application, including any and patents which may be granted therefor, its, powers, privileges and advantages in any and all such potents when granted, and benefit of said assignee, and said assignor might or could have held and
AND said assigns, any and al and prolongations i	I acts relating to the obtaining	erform, upon the request of said as sor to the asserting of said patents,	ssigned, or said assigned's successors or including any and all renewals, reissues
AND said said application, ar assigns, in accorda	nd on any and all divisions an	eers the Commissioner of Patents at d continuations thereof, to said assi	nd Trademarks to issue Letters Patent on ignee, and said assigner's successors and
As an abo made by mo, and th	ive-named inventor, I hereby nat I am the original inventor o	declare that the above-identified a or an original joint inventor of a clai	optication was made or authorized to be immed invention in the application.
I hereby a by fine or imprison	cknowledge that any willful (ment of not more than five (5)	alse statement made in this declara years, or both	is punishable under 18 U.S.C. 1001
ASSIGNOR (INVE	ENTOR):		
Signature	2.4.4	Date	<i>/</i> 62.6 <u>6</u>
Presed or Typed N	SON, Man-Gyu		
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RECORDED: 05/21/2018

PATENT REEL: 045860 FRAME: 0980