506091216 06/04/2020

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT6137936

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
CHANG HYUN KIM	05/22/2020
WAN JUN ROH	05/22/2020
DOO BOCK LEE	05/27/2020
SEUNG HUN LEE	05/22/2020
JAE JIN LEE	05/27/2020
CHUN SEOK JEONG	05/27/2020

RECEIVING PARTY DATA

Name:	SK HYNIX INC.
Street Address:	2091, GYEONGCHUNG-DAERO, BUBAL-EUB, ICHEON-SI
City:	GYEONGGI-DO
State/Country:	KOREA, REPUBLIC OF
Postal Code:	17336

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	16769830

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: 5713275450

ipntlaw@ipntlaw.com Email: IP & T GROUP LLP **Correspondent Name:** Address Line 1: 8230 LEESBURG PIKE

Address Line 2: SUITE 650

Address Line 4: VIENNA, VIRGINIA 22182

ATTORNEY DOCKET NUMBER:	2017-OPH-9842
NAME OF SUBMITTER:	KEON WOO PARK
SIGNATURE:	/Keon Woo PARK/
DATE SIGNED:	06/04/2020
	This document serves as an Oath/Declaration (37 CFR 1.63).

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REEL: 052840 FRAME: 0543 506091216

Total Attachments: 6 source=9842PCUS_executed ASS DEC-new#page1.tif source=9842PCUS_executed ASS DEC-new#page2.tif source=9842PCUS_executed ASS DEC-new#page3.tif source=9842PCUS_executed ASS DEC-new#page4.tif source=9842PCUS_executed ASS DEC-new#page5.tif

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PATENT REEL: 052840 FRAME: 0544

ASSIGNMENT OF AND DECLARATION (37 CFR 1.63) FOR APPLICATION FOR UNITED STATES LETTERS PATENT

WHEREAS Chang Hvun KIM hereinafter referred to collectively as the assignor and inventor, has invented a
certain improvement relating to
IMAGE SYNCHRONIZATION DEVICE AND IMAGE INFORMATION GENERATION APPARATUS INCLUDING THE SAME
[] said application being attached hereto; [] said application having been filed in the United States Patent and Trademark Office on
(if applicable); [X] the specification of which was filed under the Patent Cooperation Treaty on June 14, 2018
Serial No. PCT/KR2018/006691 the United States of America being designated.
AND WHEREAS SK hynix Inc. of 2091. Gycongchung-daero, Bubal-eub, Icheon-si, Gyconggi-do 17336. Republic of Korga, 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 (i.e. divisional, continuation, and continuation-in-part applications), and in and to said invention and improvements ("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, indid, 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: Chang-Hyun K/M. Date: 2020, 5, 22
Printed or Typed Name: Chang Hyun KIM
Page 1 of 6

SK hynix

ASSIGNMENT OF AND DECLARATION (37 CFR 1.63) FOR APPLICATION FOR UNITED STATES LETTERS PATENT

WHEREAS Wan Jun ROH , hereinafter referred to collectively as the assignor and inventor, has invented a
certain improvement relating to
IMAGE SYNCHRONIZATION DEVICE AND IMAGE INFORMATION GENERATION APPARATUS INCLUDING THE SAME
[] said application being attached hereto; [] said application having been filed in the United States Patent and Trademark Office on
AND WHEREAS SK hynix Inc. of 2091. Gyeongchung-daero, Bubal-eub, Icheon-si, Gyeonggi-do 17336, Republic of Korea, 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 (i.e. divisional, continuation, and continuation-in-part applications), and in and to said invention and improvements ("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: Wanjun Roh Date: 2020-05-22
Printed or Typed Name: Wan Jun ROH
Page 2 of 6

ASSIGNMENT OF AND DECLARATION (37 CFR 1.63) FOR APPLICATION FOR UNITED STATES LETTERS PATENT

cortain improvement relating to
IMAGE SYNCHRONIZATION DEVICE AND IMAGE INFORMATION GENERATION APPARATUS 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 amende as Application Serial No and was amende on (if applicable); X the specification of which was filed under the Patent Cooperation Treaty on June 14, 2018 Serial No PCT/KR2018/006691 the United States of America being designated
AND WHEREAS SK hymx lnc. of 2091, Gyeongchung-daero, Bubal-eub, Icheon-si, Gyeonggi-do 17336, Republic of Korea, heremafter 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 (i.e. divisional, continuation, and continuation impart applications), and in and to said invention and improvements ("invention") and any and all patents which may be grante 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 assigner to said assigner, the receipt of which is hereby acknowledged, said assigner hereb assigns, sells and transfers to said assigner and said assigner's successors and assigns the full and exclusive right, ritle an 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 assigner's successors and assigns, to have, hold, exercise and city 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 any wise arrang from or apportanting 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 assignee, in as ample and beneficial a manner as the said assignor might or could have held an emoyed 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 or said application, and on any and all divisions and continuations thereof, to said assignee, and said assignee's successors an 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 1777 Date: May 27, 2020
Printed or Typed Name: Doo Bock LEE Page 1 of 1

PATENT REEL: 052840 FRAME: 0547

ASSIGNMENT OF AND DECLARATION (37 CFR 1.63) FOR APPLICATION FOR UNITED STATES LETTERS PATENT

WHEREAS Soung Hun LEE , hereinafter referred to collectively as the assignor and inventor, has invented a
certain improvement relating to
IMAGE SYNCHRONIZATION DEVICE AND IMAGE INFORMATION GENERATION APPARATUS INCLUDING THE SAME
[] said application being attached hereto; [] said application having been filed in the United States Patent and Trademark Office on
on(if applicable); [X] the specification of which was filed under the Patent Cooperation Treaty onlune 14, 2018
[A] the specification of which was fried under the Patent Cooperation Treaty onlune 14, 2018
AND WHEREAS SK hynix Inc. of 2091. Gyeongchung daero, Bubal-cub, Icheon-si, Gyeongei-do 17336, Republic of Korea, hereinafter referred to as the assignee or applicant, is desirous of acquiring the emire right, title and interest in and to said application, including any and all divisions and continuations thereof (i.e. divisional, continuation, and continuation-in-part applications), and in and to said invention and improvements ("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: <u>Soung Hun Lee</u> Date: 2020.05.22
Printed or Typed Name: Seung Hun LEE
Page 4 of 6

SK hynix

ASSIGNMENT OF AND DECLARATION (37 CFR 1.63) FOR APPLICATION FOR UNITED STATES LETTERS PATENT

WHEREAS Jac Holles bereinsher referred to collectively as the assignor and inventor, has invented a
certain improvement relating to
IMAGE SYNCHRONIZATION DEVICE AND IMAGE INFORMATION GENERATION APPARATUS 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
or(if applicable); [X] the specification of which was filed under the Patent Cooperation Treaty on
[X] the specification of which was filed under the Patent Cooperation Treaty on
AND WHEREAS <u>5K hymix lnc. of 2091. Gycongcliums-dacto. Bubul-cub. Ichcon-si. Gyconggi-do 17336. Republic of Korea,</u> hereinafter referred to as the assignee or applicant, is desirous of acquiring the entire right, title and interest in said application, including any and all divisions and continuations thereof (i.e. divisional, continuation, and continuation-in-part applications), and in and to said invention and improvements ("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 Que Dollar (\$1.00), and other good and valuable consideration paid by said assigner to said assigner, the receipt of which is hereby acknowledged, said assigner hereby assigns, sells and transfers to said assigner, and said assigner's successors and assigns, the full and exclusive right, tide and interest in and to said application, including any and all divisions and communitions thereof, and in and to said invention and any and all patients which may be granted therefor, including any and all renewals, reissues and prolongations thereof, said assigner, and said assigner'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 patients 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 thereso, for and during the term or terms of any and all such patients when granted, including any and all renewals, reissues and prolongations thereof, for the use and benefit of said assigner, and said assigner'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. 100) by fine or imprisonment of not more than five (5) years, or both.
ASSIGNOR (INVENTOR):
Signature: JASJIV, LEE 0000 5/27/2020
Printed or Typed Name: <u>Ise Jin LEE</u>
Page 1 of 1

ASSIGNMENT OF AND DECLARATION (37 CFR 1.63) FOR APPLICATION FOR UNITED STATES LETTERS PATENT

WHEREAS Chun Seok JEONG , hereinafter referred to collectively as the assignor and inventor, has invented

a certain improvement relating to
IMAGE SYNCHRONIZATION DEVICE AND IMAGE INFORMATION GENERATION APPARATUS
INCLUDING THE SAME ,
[] said application being attached hereto; [] said application having been filed in the United States Patent and Trademark Office on
Serial No. PCT/KR2018/006691 , the United States of America being designated.
AND WHEREAS SK hynix Inc. of 2091, Gyeongchung-daero, Bubal-eub, Icheon-si, Gyeonggi-do 17336, Republic of Korea, 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 (i.e. divisional, continuation, and continuation-in-part applications), and in and to said invention and improvements ("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: Chunseok Jeonst Date: 20/5/29
Printed or Typed Name: Chun Seok JEONG
Page 6 of 6