506807452 08/09/2021

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT6854271

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
DAE SHIK KIM	05/20/2021
MIN-SUN KEEL	05/20/2021
HOON JOO NA	05/20/2021
KANG HO LEE	05/20/2021
KIL HO LEE	05/20/2021
SANG KIL LEE	05/20/2021
JUNG HYUK LEE	05/20/2021
SHIN HEE HAN	05/20/2021

RECEIVING PARTY DATA

Name:	SAMSUNG ELECTRONICS CO., LTD.
Street Address:	129, SAMSUNG-RO, YEONGTONG-GU
City:	SUWON-SI, GYEONGGI-DO
State/Country:	KOREA, REPUBLIC OF
Postal Code:	16677

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	17393855

CORRESPONDENCE DATA

Fax Number: (703)668-8200

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: 703-668-8000

Email: dcmailroom@hdp.com

Correspondent Name: HARNESS, DICKEY & PIERCE, P.L.C.

Address Line 1: P.O. BOX 8910

Address Line 4: RESTON, VIRGINIA 20195

ATTORNEY DOCKET NUMBER: 2677-000633-US	
NAME OF SUBMITTER:	JOHN A. CASTELLANO, REG. NO. 35,094
SIGNATURE:	/John A. Castellano/

PATENT 506807452 REEL: 057118 FRAME: 0604

DATE SIGNED:	08/09/2021	
Total Attachments: 18		
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COMBINED DECLARATION (37 CFR §1.63) FOR UTILITY PATENT APPLICATION AND ASSIGNMENT FORM¹

The undersigned ackr	nowledges that this do	cument is being use	ed both as an assi _l	gnment of
the invention and as	the declaration (37 CF	R 1.63) for a Utility	or Design Applicat	ion.
WHEREAS, the under	signed, hereinafter ref	erred to collectively	y as Assignor, has	invented:
Title: IMAGE SENS	OR			
for which Assignor is for patent.	about to make or has	made United States	or international a	pplication
WHEREAS, as a below	named inventor(s), I/	(we) hereby declare	e that:	
Section I. Declaration	n			
This declaration is dir	ected to: tached U.S. non-provi	sional patent applic	ation, or	
	on-provisional patent		3850	, filed
PCT int	ternational patent app	lication number	·	, filed on
The above-identified	application was made	or authorized to be	made by me (us)	
	m (we are) the origina e-Identified applicatio		oint inventors) of	a claimed
· · · · · · · · · · · · · · · · · · ·	ledge that any willful f U.S.C. 1001 by fine or			
² This form requires the t	use of an Application Data	Sheet.		
SEC Ref NoIE-	-202007-056-1-US0	Attorney Ref f	No. 2677-000	633-US
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SAMSUNG ELECTRONICS CO., LTD.

I hereby state that I have reviewed and understand the contents of the above identified application, including the claims.

I acknowledge that I am aware of the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56.

Section II. Assignment

In consideration of the sum of One Dollar (\$1.00) and other good and valuable consideration paid to each of the undersigned, the undersigned hereby sell(s) and assign(s) to

Samsung Electronics Co., Ltd.

having an address at 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do 16677, Republic of Korea (hereinafter designated as the Assignee), the entire (100%) right, title and interest for the United States as defined in 35 USC §100, in the invention described in the application identified in Section I of this document.

Assignor hereby confirms any prior assignment to Assignee, and to the extent that Assignor has not already done so, agrees to assign, and hereby does, sell, assign and transfer unto Assignee and its successors in interest, the full and exclusive right, title and interest in the United States of America and throughout the world, including the right to claim priority under the laws of the United States, the Paris Convention, and any foreign countries, to the inventions as described in the aforesaid application, to the aforesaid application itself, and all divisions, continuations, continuations in part, or other applications claiming priority directly or indirectly from the aforesaid application, and any United States or foreign Letters Patent, utility model, or other similar rights which may be granted thereon, including reissues, reexaminations and extensions thereof, and all copyright rights throughout the world in the aforesaid application and the subject matter disclosed therein, these rights, title and interest to be held and enjoyed by Assignee to the full end of the term for which the Letters Patent, utility model, or other similar rights, are granted and any extensions thereof as fully and entirely as the same would have been held by Assignor had this assignment and sale not been made, and the right to sue for, and recover for past infringements of, or liabilities for, any of the rights relating to any of the applications, patents, utility models, or other similar rights, resulting therefrom, and the copyright rights;

Assignor hereby covenants and agrees to execute all instruments or documents required or requested for the making and prosecution of any applications of any type for patent, utility model, or other similar rights, and for copyright, in the United States and in all foreign countries including, but not limited to, any provisional, continuation, continuation-in-part, divisional, renewal or substitute thereof, and as to letters patent any reissue, re-

SEC Ref No. 1E-202007-056-1-US0 Attorney Ref No. 2677-000633-US

examination, or extension thereof, and for litigation regarding, or for the purpose of protecting title and to the said invention, the United States application for patent, or Letters Patent therefor, and to testify in support thereof, for the benefit of Assignee without further or other compensation than that above set forth;

Assignor hereby covenants that no assignment, sale, license, agreement or encumbrance has been or will be entered into which would conflict with this Assignment; and

Assignor hereby requests the United States Patent and Trademark Office to issue the Letters Patent of the United States of America to Assignee, and requests that any official of any country or countries foreign to the United States, whose duty it is to issue or grant patents and applications as aforesaid, to issue the Letters Patent, Utility Model Registration or other similar right to Assignee.

The undersigned hereby grant(s) the law firm of Harness, Dickey & Pierce, P.L.C. the power to insert on this Declaration and Assignment any further identification which may be necessary or desirable in order to comply with the rules of the U.S. Patent and Trademark Office for recordation of this document.

Section III. Inventor(s)/Assignor(s) Signature(s)

LEGAL NAME OF	Family Name	First Given Name	Second Given Name
FIRST INVENTOR/ASSIGNOR	KIM ANDRIDE(SELAS	Dae Shik	
SIGNATURE	Rim dreshiR	DATE	20/5/2/

SEC Ref No. IE-202007-056-1-US0 Attorney Ref No. 2677-000633-US

LEGAL NAME OF SECOND	Family Name	First Given Name	Second Given Name
INVENTOR/ASSIGNOR	KEEL	Min-Sun	
SIGNATURE	Ked-	DATE -	May. 20. '21

LEGAL NAME OF THIRD INVENTOR/ASSIGNOR	Family Name	First Given Name	Second Given Name
	NA	Hoon Joo	
SIGNATURE _		DATE -	

LEGAL NAME OF FOURTH	Family Name	First Given Name	Second Given Name
INVENTOR/ASSIGNOR	LEE	Kang Ho	
SIGNATURE		DATE	

SEC Ref No.	IE-202007-056-1-US0	Attorney Ref No.	2677-000633-US

LEGAL NAME OF FIFTH	Family Name	First Given Name	Second Given Name
INVENTOR/ASSIGNOR	LEE	Kil Ho	
SIGNATURE	a/2/62	DATE	20/5/21

LEGAL NAME OF	Family Name	First Given Name	Second Given Name
SIXTH NVENTOR/ASSIGNOR	LEE	Sang Kil	/a/w
	à 1 -1	n	-/2/1
SIGNATURE	81 82 64	DATE	= 2

차세의TD템(반도체연)/골대쉬/08083850

LEGAL NAME OF	Family Name	First Given Name	Second Given Name
SEVENTH INVENTOR/ASSIGNOR	LEE	Jung Hyuk	
SIGNATURE	In Yuf	y DATE	24/5/24

LEGAL NAME OF EIGHTH	Family Name	First Given Name	Second Given Name
INVENTOR/ASSIGNOR	HAN	Shin Hee	
SIGNATURE		DATE	20/5/21

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COMBINED DECLARATION (37 CFR §1.63) FOR UTILITY PATENT APPLICATION AND ASSIGNMENT FORM¹

The undersigned ackr	nowledges that this do	cument is being use	ed both as an assi _l	gnment of
the invention and as	the declaration (37 CF	R 1.63) for a Utility	or Design Applicat	ion.
WHEREAS, the under	signed, hereinafter ref	erred to collectively	y as Assignor, has	invented:
Title: IMAGE SENS	OR			
for which Assignor is for patent.	about to make or has	made United States	or international a	pplication
WHEREAS, as a below	named inventor(s), I/	(we) hereby declare	e that:	
Section I. Declaration	n			
This declaration is dir	ected to: tached U.S. non-provi	sional patent applic	ation, or	
	on-provisional patent		3850	, filed
PCT int	ternational patent app	lication number	·	, filed on
The above-identified	application was made	or authorized to be	made by me (us)	
	m (we are) the origina e-Identified applicatio		oint inventors) of	a claimed
· · · · · · · · · · · · · · · · · · ·	ledge that any willful f U.S.C. 1001 by fine or			
² This form requires the t	use of an Application Data	Sheet.		
SEC Ref NoIE-	-202007-056-1-US0	Attorney Ref f	No. 2677-000	633-US
COMMINST NECT ADATO	N (27 CED 1 CE) EMB (5)	IN ITV DATERIT ADBI IC	ATION AND ACTION	RACKIT CADAR

SAMSUNG ELECTRONICS CO., LTD.

I hereby state that I have reviewed and understand the contents of the above identified application, including the claims.

I acknowledge that I am aware of the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56.

Section II. Assignment

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Samsung Electronics Co., Ltd.

having an address at 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do 16677, Republic of Korea (hereinafter designated as the Assignee), the entire (100%) right, title and interest for the United States as defined in 35 USC §100, in the invention described in the application identified in Section I of this document.

Assignor hereby confirms any prior assignment to Assignee, and to the extent that Assignor has not already done so, agrees to assign, and hereby does, sell, assign and transfer unto Assignee and its successors in interest, the full and exclusive right, title and interest in the United States of America and throughout the world, including the right to claim priority under the laws of the United States, the Paris Convention, and any foreign countries, to the inventions as described in the aforesaid application, to the aforesaid application itself, and all divisions, continuations, continuations in part, or other applications claiming priority directly or indirectly from the aforesaid application, and any United States or foreign Letters Patent, utility model, or other similar rights which may be granted thereon, including reissues, reexaminations and extensions thereof, and all copyright rights throughout the world in the aforesaid application and the subject matter disclosed therein, these rights, title and interest to be held and enjoyed by Assignee to the full end of the term for which the Letters Patent, utility model, or other similar rights, are granted and any extensions thereof as fully and entirely as the same would have been held by Assignor had this assignment and sale not been made, and the right to sue for, and recover for past infringements of, or liabilities for, any of the rights relating to any of the applications, patents, utility models, or other similar rights, resulting therefrom, and the copyright rights;

Assignor hereby covenants and agrees to execute all instruments or documents required or requested for the making and prosecution of any applications of any type for patent, utility model, or other similar rights, and for copyright, in the United States and in all foreign countries including, but not limited to, any provisional, continuation, continuation-in-part, divisional, renewal or substitute thereof, and as to letters patent any reissue, re-

SEC Ref No. IE-202007-056-1-US0 2677-000633-US Attorney Ref No.

PATENT

REEL: 057118 FRAME: 0613

COMBINED DECLARATION (37 CFR 1.63) FOR UTILITY PATENT APPLICATION AND ASSIGNMENT FORM Page 2 of 6

examination, or extension thereof, and for litigation regarding, or for the purpose of protecting title and to the said invention, the United States application for patent, or Letters Patent therefor, and to testify in support thereof, for the benefit of Assignee without further or other compensation than that above set forth:

Assignor hereby covenants that no assignment, sale, license, agreement or encumbrance has been or will be entered into which would conflict with this Assignment; and

Assignor hereby requests the United States Patent and Trademark Office to issue the Letters Patent of the United States of America to Assignee, and requests that any official of any country or countries foreign to the United States, whose duty it is to issue or grant patents and applications as aforesaid, to issue the Letters Patent, Utility Model Registration or other similar right to Assignee.

The undersigned hereby grant(s) the law firm of Harness, Dickey & Pierce, P.L.C. the power to insert on this Declaration and Assignment any further identification which may be necessary or desirable in order to comply with the rules of the U.S. Patent and Trademark Office for recordation of this document.

Section III. Inventor(s)/Assignor(s) Signature(s)

LEGAL NAME OF FIRST	Family Name	First Given Name	Second Given Name
INVENTOR/ASSIGNOR	KIM 차세대(10왕(반도세)	Dae Shik	
SIGNATURE	Rim die sliR	DATÉ	20/5/2/
			······

SEC Ref No. IE-202007-056-1-US0 2677-000633-US Attorney Ref No.

LEGAL NAME OF SECOND	Family Name	First Given Name	Second Given Name
INVENTOR/ASSIGNOR	KEEL	Min-Sun	
			
SIGNATURE		DATE	
		`	

LEGAL NAME OF	Family Name	First Given Name	Second Given Name
THIRD INVENTOR/ASSIGNOR	NA	Hoon Joo	
SIGNATURE	Hænjoo Na	DATE	2021/05/21

Foundry 罗罗河出售(世基、河罗)/丰富全/07037618

LEGAL NAME OF	Family Name	First Given Name	Second Given Name
FOURTH INVENTOR/ASSIGNOR	LEE	Kang Ho	
		•	
SIGNATURE		DATE	·

SEC Ref No.	IE-202007-056-1-US0	Attorney Ref No.	2677-000633-US
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LEGAL NAME OF FIFTH	Family Name	First Given Name	Second Given Name
INVENTOR/ASSIGNOR	LEE	Kil Ho	
SIGNATURE	a/2/62	DATE	20/5/21

SIXTH INVENTOR/ASSIGNOR	LEE	Sang Kil	W	/Lu
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signature 💋 🗸	2/4,	DATE		

차세역TO템(발도체연)/골대식/05053850

LEGAL NAME OF	Family Name	First Given Name	Second Given Name
SEVENTH INVENTOR/ASSIGNOR	LEE	Jung Hyuk	
SIGNATURE	Juj Vyd	DATE	<u>24/5/2</u> 1

LEGAL NAME OF EIGHTH	Family Name	First Given Name	Second Given Name
INVENTOR/ASSIGNOR	нап	Shin Hee	
SIGNATURE	JAL-	DATE	20/5/24

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COMBINED DECLARATION (37 CFR §1.63) FOR UTILITY PATENT APPLICATION AND ASSIGNMENT FORM¹

The undersigned acknowledges that this document is being used both as an assignment of the invention and as the declaration (37 CFR 1.63) for a Utility or Design Application.

WHEREAS, the undersigned, hereinafter referred to collectively as Assignor, has invented:

for which As	signor is about to make or has m	nade United States or Int	ternational application
for patent.			
WHEREAS, a	s a below named inventor(s), I/(we) hereby declare that	
Section I. De	eclaration		
This declarat	ion is directed to:		
	The attached U.S. non-provisi	ional patent application,	or .
	U.S. non-provisional patent ap on		, filed
	PCT international patent appli	ication number	, filed on
The above-io	lentified application was made o	or authorized to be made	e by me (us).
	e that I am (we are) the original i the above-identified application		nventors) of a claimed
	/ acknowledge that any willful fa nder 18 U.S.C. 1001 by fine or in		
¹ This form red	quires the use of an Application Data Si	heet.	

I hereby state that I have reviewed and understand the contents of the above identified application, including the claims.

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Samsung Electronics Co., Ltd.

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Assignor hereby covenants and agrees to execute all instruments or documents required or requested for the making and prosecution of any applications of any type for patent, utility model, or other similar rights, and for copyright, in the United States and in all foreign countries including, but not limited to, any provisional, continuation, continuation-in-part, divisional, renewal or substitute thereof, and as to letters patent any reissue, re-

SEC Ref No. IE-202007-056-1-US0 Attorney Ref No. 2677-000633-US

COMBINED DECLARATION (37 CFR 1.63) FOR UTILITY PATENT APPLICATION AND ASSIGNMENT FORM
Page 2 of 6

examination, or extension thereof, and for litigation regarding, or for the purpose of protecting title and to the said invention, the United States application for patent, or Letters Patent therefor, and to testify in support thereof, for the benefit of Assignee without further or other compensation than that above set forth;

Assignor hereby covenants that no assignment, sale, license, agreement or encumbrance has been or will be entered into which would conflict with this Assignment; and

Assignor hereby requests the United States Patent and Trademark Office to issue the Letters Patent of the United States of America to Assignee, and requests that any official of any country or countries foreign to the United States, whose duty it is to issue or grant patents and applications as aforesaid, to issue the Letters Patent, Utility Model Registration or other similar right to Assignee.

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Section III. Inventor(s)/Assignor(s) Signature(s)

LEGAL NAME OF	Family Name	First Given Name	Second Given Name
FIRST INVENTOR/ASSIGNOR	KIM AMATOR(US.493)	Dae Shik	
SIGNATURE	Rim daeshiR	DATE	20/5/2/
Sidianiona	<u> </u>		

LEGAL NAME OF SECOND	Family Name	First Given Name	Second Given Name
INVENTOR/ASSIGNOR	KEEL	Min-Sun	
	· · · · · · · · · · · · · · · · · · ·		
SIGNATURE		DATE	

LEGAL NAME OF THIRD			Second Given Name	
INVENTOR/ASSIGNOR	NA	Hoon Joo	7	
	4	<u></u>		
SIGNATURE _		DATE		

LEGAL NAME OF FOURTH	Family Name	First Given Name	Second Given Name
INVENTOR/ASSIGNOR	LEE	Kang Ho	
		DATE	20/5/21
SIGNATURE :	the control of the co		

SE	C Ref No.	1F-29	02007-056-1-TISI	ß Att	orney Ref No.	2677-8	00633-US

			n Name
LEE	Kil Ho		
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<u> 1262</u>	DATE -	20/5/	<u> </u>
	1EE		

LEGAL NAME OF		Family Name	First Give	en Name	Second	Given Name
SIXTH INVENTOR/ASSIGNOR		LEE	San	g Kil	M	
±	<u> </u>	, 1		74	***************************************	1. 1 4
SIGNATURE	4	42/74	_	DATE	>	75/21 ——
	1					

지세여10일(반도세염)/길여석/05/63850

LEGAL NAME OF	Family Name	First Given Name	Second Given Name
SEVENTH INVENTOR/ASSIGNOR	LEE	Jung Hyuk	
<u> </u>			
SIGNATURE	Fyllyn	DATE	2/5/21

IE-202007-056-1-US0 SEC Ref No. Attorney Ref No. 2677-000633-US SAMSUNG ELECTRONICS CO., LTD.

LEGAL NAME OF EIGHTH	Family Name	First Given Name	Second Given Name
INVENTOR/ASSIGNOR	HAN	Shin Hee	
SIGNATURE		DATE	20/5/21

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SEC Ref No. IE-202007-056-1-US0 Attorney Ref No. 2677-000633-US

COMBINED DECLARATION (37 CFR 1.63) FOR UTILITY PATENT APPLICATION AND ASSIGNMENT FORM Page 6 of 6