506347188 11/10/2020

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT6393942

| SUBMISSION TYPE: | NEW ASSIGNMENT |
|-----------------------|----------------|
| NATURE OF CONVEYANCE: | ASSIGNMENT |

CONVEYING PARTY DATA

| Name | Execution Date |
|----------------|----------------|
| SEUNGSOO JEONG | 11/06/2020 |
| CHANYUL KIM | 11/06/2020 |
| MINSOO PARK | 11/06/2020 |
| MINWOO PARK | 11/06/2020 |
| KIHO CHOI | 11/06/2020 |
| NARAE CHOI | 11/06/2020 |
| WOONGIL CHOI | 11/06/2020 |
| ANISH TAMSE | 11/06/2020 |
| YINJI PIAO | 11/06/2020 |

RECEIVING PARTY DATA

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

PROPERTY NUMBERS Total: 1

| Property Type | Number | |
|---------------------|----------|--|
| Application Number: | 17054347 | |

CORRESPONDENCE DATA

Fax Number: (202)293-7860

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.

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ATTORNEY DOCKET NUMBER: Q246587 NAME OF SUBMITTER: TEAMS - BORAM

PAIENI REEL: 054325 FRAME: 0697 506347188

| SIGNATURE: | /bju/ | |
|--|--|--|
| DATE SIGNED: | 11/10/2020 | |
| | This document serves as an Oath/Declaration (37 CFR 1.63). | |
| Total Attachments: 6 | | |
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PATENT REEL: 054325 FRAME: 0698

Docket No.: Q246587 SEC Ref: MK2018050341US1 Only After Sept 16, 2012

ASSIGNMENT WITH DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)

Whereas, We, the undersigned inventors bereinafter called assignors, have invented certain improvements described in the application identified below; and

Whereas, SAMSUNG ELECTRONICS CO., LTD, of 129, Samsung-to, Yeongtong-gu, Suwon-si, Gyconggi-do, 16677, Republic of Korea, (assignee), desires to acquire the entire right, title, and interest in the application and invention, and to any United States patents to be obtained therefor:

Now therefore, for valuable consideration, receipt whereof is hereby acknowledged,

We, the above named assignors, hereby sell, assign and transfer to the above named assignee, its successors and assigns, the entire right, title and interest in the application and the invention disclosed therein for the United States of America and all other countries, including all divisions, and continuations thereof, and all Letters Patent of the United States that may be granted thereon, and all reissues thereof, and including rights of priority under the International Convention of Paris (1883) as amended, the laws of all foreign countries, and the laws of the United States including the right to claim priority under 35 USC 119 and the right to sue for past damages, and we request the Director of the U.S. Patent and Trademark Office to issue any Letters Patent granted upon the invention set forth in the application to the assignee, its successors and assigns; and we hereby agree that the assignee may apply for foreign Letters Patent on the invention and we will execute without further consideration all papers deemed necessary by the assignee in connection with the United States and foreign applications when called upon to do so by the assignee.

(Legalization not required for recording but is prima facie evidence of execution under 35 USC 261)

| As the below named inventor, I hereby | y deci | fare that: |
|---|--------|--|
| This assignment with declaration is directed to: | | The attached application, or |
| MATERIAL STATE OF THE STATE OF | 図 | United States Application or PCT International Application Number PCT/KR2019/005671 filed on May 10, 2019. |

The application is entitled:

ENCODING METHOD AND DEVICE THEREFOR, AND DECODING METHOD AND DEVICE THEREFOR

The above identified application was made or was authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I have reviewed and understand the contents of the application for which this assignment with declaration is being submitted.

I am aware of the duty to disclose to the Office all information known to me to be material to patentability as defined in 37 CFR 1.56.

I hereby acknowledge that any willful false statement made in this assignment with declaration is punishable under 18 USC 1001 by fine or imprisonment of not more than five (5) years, or both.

[Page 1]

PATENT REEL: 054325 FRAME: 0699

| NAME OF SOLE OR FIRST INVENTOR: | | | |
|---|---|---|---|
| Given Name (first and middle [if any]) S | eungsoo | Family Name or Sur | name JEONG |
| Inventor's signature | Sengso Jenz | <u> </u> | Date 2025 , 11.06 |
| Residence: Suwon-si, Republic of Kon | ca | | |
| Mailing Address: 129, Samsung-ro, Ye | ongtong-gu, Suwon-si, Gyeo | nggi-do, 16677, Repub | lic of Korea |
| NAME OF SECOND INVENTOR: | | ······································ | *************************************** |
| Given Name (first and middle [if any]) C | hanyul | Family Name or Sur | name KIM |
| Inventor's signature | Changul | | Date 2020, 11, 06 |
| Residence: Suwon-si, Republic of Kor | 28 | | |
| Mailing Address: 129, Samsung-ro, Ye | ongtong-gu, Suwon-si, Gyeo | nggi-do, 16677, Repub | lic of Korea |
| NAME OF THIRD INVENTOR: | *************************************** | · | • |
| Given Name (first and middle [if any]) N | finsoo | Family Name or Sur | name PARK |
| Inventor's signature | n'inazo Pank | | Date 2020, 11, 06 |
| Residence: Suwon-si, Republic of Korea | | | |
| Mailing Address: 129, Samsung-to, Ye | ongtong-gu, Suwon-si, Gyeo | nggi-do, 16677, Repub | lic of Korea |
| NAME OF FOURTH INVENTOR: | ••••• | | |
| Given Name (first and middle [if any]) Mi | 8WOD | Family Name or Surns | ume PARK |
| Inventor's signature Park | Min Was | | Date 3030, 11.06 |
| Residence: Suwon-si, Republic of Korea | | | |
| Mailing Address: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea | | | |
| NAME OF FIFTH INVENTOR: | | *************************************** | |
| Given Name (first and middle [if any]) Kil | 00 | Family Name or Surn | ние СНОІ |
| Inventor's signature | kiho | | Date 5020, 11,06 |
| Residence: Suwon-si, Republic of Kor | ea | | |
| Mailing Address: 129, Samsung-ro, Ye | ongtong-gu, Suwon-si, Gyeo | nggi-do, 16677, Repub | lic of Korea |

| NAME OF SIXTH INVENTOR: | | | |
|---|-----------------------------------|--|--|
| Given Name (first and middle [if any]) Narae | Family Name or Surname CHOI | | |
| Inventor's signature Marae Choï | Date 3020, 11.06 | | |
| Residence: Suwon-si, Republic of Korea | | | |
| Mailing Address: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeon | nggi-do, 16677, Republic of Korea | | |
| NAME OF SEVENTH INVENTOR: | | | |
| Given Name (first and middle [if any]) Woongil | Family Name or Surname CHOI | | |
| Inventor's signature | Date 2020, 11, 06 | | |
| Residence: Suwon-si, Republic of Korea | | | |
| Mailing Address: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeor | aggi-do, 16677, Republic of Korea | | |
| NAME OF EIGHTH INVENTOR: | y | | |
| Given Name (first and middle [if any]) Anish | Family Name or Surname TAMSE | | |
| Inventor's signature | Date | | |
| Residence: Suwon-si, Republic of Korea | | | |
| Mailing Address: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea | | | |
| NAME OF NINTH INVENTOR: | | | |
| Given Name (first and middle [if any]) Yinji | Family Name or Surname PIAO | | |
| Inventor's signature — Lag | Date 200 11, 6 | | |
| Residence: Suwon-si, Republic of Korea | | | |
| Mailing Address: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeon | ggi-do, 16677, Republic of Korea | | |

Docket No.: Q246587 SEC Ref: MK2018050341US1 Only After Sept 16, 2012

ASSIGNMENT WITH DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)

Whereas, We, the undersigned inventors hereinafter called assignors, have invented certain improvements described in the application identified below; and

Whereas, SAMSUNG ELECTRONICS CO., LTD. of 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea, (assignee), desires to acquire the entire right, title, and interest in the application and invention, and to any United States patents to be obtained therefor:

Now therefore, for valuable consideration, receipt whereof is hereby acknowledged,

We, the above named assignors, hereby self, assign and transfer to the above named assignee, its successors and assigns, the entire right, title and interest in the application and the invention disclosed therein for the United States of America and all other countries, including all divisions, and continuations thereof, and all Letters Patent of the United States that may be gramed thereon, and all reissues thereof, and including rights of priority under the International Convention of Paris (1883) as amended, the laws of all foreign countries, and the laws of the United States including the right to claim priority under 35 USC 119 and the right to sue for past damages, and we request the Director of the U.S. Patent and Trudemark Office to issue any Letters Patent granted upon the invention set forth in the application to the assignce, its successors and assigns; and we hereby agree that the assignce may apply for foreign Letters Patent on the invention and we will execute without further consideration all papers deemed necessary by the assignee in connection with the United States and foreign applications when called upon to do so by the assignee.

(Legalization not required for recording but is prima facie evidence of execution under 35 USC 261)

As the below named inventor, I hereby declare that:

This assignment with declaration is

directed to:

The attached application, or

United States Application or PCT International Application Number PCT/KR2019/005671

6ted on May 10, 2019.

The application is entitled:

ENCODING METHOD AND DEVICE THEREFOR, AND DECODING METHOD AND DEVICE THEREFOR

The above identified application was made or was authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I have reviewed and understand the contents of the application for which this assignment with declaration is being submitted.

I am aware of the duty to disclose to the Office all information known to me to be material to patentability as defined in 37 CFR 1.56.

I hereby acknowledge that any willful false statement made in this assignment with declaration is punishable under 18 USC 1001 by fine or imprisonment of not more than five (5) years, or both.

> **PATENT REEL: 054325 FRAME: 0702**

| NAME OF SOLE OR FIRST INVENTOR: | | | | |
|---|------------------------------------|--|--|--|
| Given Name (first and middle [if any]) Seungsoo | Family Name or Surname JEONG | | | |
| Inventor's signature | Date | | | |
| Residence: Suwon-si, Republic of Korea | | | | |
| Mailing Address: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea | | | | |
| NAME OF SECOND INVENTOR: | | | | |
| Given Name (first and middle [if any]) Chanyul | Family Name or Surname KIM | | | |
| Inventor's signature | Date | | | |
| Residence: Suwon-si, Republic of Korea | | | | |
| Mailing Address: 129, Samsung-ro, Yeongtong-gu, Suwon-sì, Gyer | onggi-do, 16677, Republic of Korea | | | |
| NAME OF THIRD INVENTOR: | | | | |
| Given Name (first and middle [if any]) Minsoo | Family Name or Sumane PARK | | | |
| Inventor's signature | Date | | | |
| Residence: Suwon-si, Republic of Korea | | | | |
| Mailing Address: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyer | nggi-do, 16677, Republic of Korea | | | |
| NAME OF FOURTH INVENTOR: | | | | |
| Given Name (first and middle [if any]) Minwoo | Family Name or Surname PARK | | | |
| Inventor's signature | Date | | | |
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| NAME OF FIFTH INVENTOR: | | | | |
| Given Name (first and middle [if any]) Kiho | Family Name or Surname CHOI | | | |
| Inventor's signature | Date | | | |
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| | | | | |

PATENT [Page 2] **REEL: 054325 FRAME: 0703**

| NAME OF SIXTH INVENTOR: | |
|---|---|
| Given Name | Family Name or Surname CHOI |
| (first and middle [if any]) Narae | Family Name or Surname CHOI |
| Inventor's signature | Date |
| Residence: Suwon-si, Republic of Kor | 788 |
| Mailing Address: 129, Samsung-ro, Yeongto | ing-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea |
| NAME OF SEVENTH INVENTOR: | |
| Given Name (first and middle [if any]) Woons | gil Family Name or Surname CHOI |
| Inventor's signature | Date |
| Residence: Suwon-si, Republic of Kor | rea |
| Mailing Address: 129, Samsung-ro, Yeongto | ong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea |
| NAME OF EIGHTH INVENTOR: | |
| Given Name (first and middle [if any]) Anish | Family Name or Surname TAMSE |
| Inventor's signature | Date 6th Nov 2020 |
| Residence: Suwon-si, Republic of Kor | rea |
| Mailing Address: 129, Samsung-ro, Yeongto | ong-gu, Suwon-si, Gyconggi-do, 16677, Republic of Korea |
| NAME OF NINTH INVENTOR: | |
| Given Name (first and middle [if any]) Yinji | Family Name or Surname PIAO |
| Inventor's signature | Date |
| Residence: Suwon-si, Republic of Kore | ra. |
| Mailing Address: 129, Samsung-ro, Yeongto | ng-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea |

Page 3 PATENT REEL: 054325 FRAME: 0704

RECORDED: 11/10/2020