# 505931332 02/24/2020

# PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT5978050

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

### **CONVEYING PARTY DATA**

| Name                  | Execution Date |
|-----------------------|----------------|
| JARKKO L. KNECKT      | 05/15/2017     |
| CHRISTIAAN A. HARTMAN | 05/15/2017     |
| GUOQING LI            | 05/16/2017     |
| JOONSUK KIM           | 06/05/2017     |
| MATTHEW L. SEMERKSY   | 05/15/2017     |
| OREN SHANI            | 05/15/2017     |
| SYED A. MUJTABA       | 08/14/2017     |
| YONG LIU              | 05/15/2017     |

# **RECEIVING PARTY DATA**

| Name:           | APPLE INC.         |
|-----------------|--------------------|
| Street Address: | ONE APPLE PARK WAY |
| City:           | CUPERTINO          |
| State/Country:  | CALIFORNIA         |
| Postal Code:    | 95014              |

# **PROPERTY NUMBERS Total: 1**

| Property Type       | Number   |
|---------------------|----------|
| Application Number: | 16798835 |

### **CORRESPONDENCE DATA**

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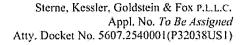
Address Line 1: 1100 NEW YORK AVENUE, N.W. Address Line 4: WASHINGTON, D.C. 20005

| ATTORNEY DOCKET NUMBER: | 5607.2540002 (P32038US2)         |  |
|-------------------------|----------------------------------|--|
| NAME OF SUBMITTER:      | /TODD M. HOPFINGER/              |  |
| SIGNATURE:              | /Todd M. Hopfinger, Reg.# 72567/ |  |

PATENT 505931332 REEL: 051903 FRAME: 0637

| DATE SIGNED:                       | 02/24/2020 |  |
|------------------------------------|------------|--|
| Total Attachments: 6               |            |  |
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| source=5607254assignment#page6.tif |            |  |

PATENT REEL: 051903 FRAME: 0638





#### ASSIGNMENT

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged by each of the undersigned inventor(s): Jarkko L. KNECKT, Christiaan A. HARTMAN, Guoqing LI, Joonsuk KIM, Matthew L. SEMERSKY, Oren SHANI, Syed A. MUJTABA and Yong LIU, the undersigned hereby sell(s) and assign(s) to Apple Inc., a corporation formed under the laws of the State of California, whose mailing address is 1 Infinite Loop, Cupertino, CA 95014 (hereafter referred to as the Assignee), his/her entire right, title and interest, including the right to sue for past infringement and to collect for all past, present and future damages, for the United States of America (as defined in 35 U.S.C. § 100) and throughout the world,

| (a) in the invention(s) known a       |                     |                     |                        |
|---------------------------------------|---------------------|---------------------|------------------------|
| application(s) for patent in the Un   | ited States of Amer | rica has been execu | ted by the undersigned |
| and has a filing date or a 371(c) dat | e of                | (also known         | as United States       |
| Application No),                      | in any and all app  | plications thereon, | in any and all Letters |
| Patent(s) therefor, and               |                     |                     |                        |

- (b) in any and all application(s) that claim the benefit of the patent application listed above in part (a), including non-provisional applications, continuing (continuation, divisional, or continuation-in-part) applications, reissues, extensions, renewals and reexaminations of the patent application or Letters Patent therefor listed above in part (a), to the full extent of the term or terms for which Letters Patents issue, and
- (c) in any and all invention(s) described in the patent application listed above in part (a), and in any and all forms of intellectual and industrial property protection derivable from such patent application, and that are derivable from any and all continuing applications, reissues, extensions, renewals and reexaminations of such patent application, including, without limitation, patents, applications, utility models, inventor's certificates, and designs together with the right to file applications therefor; and including the right to claim the same priority rights from any previously filed applications under the International Agreement for the Protection of Industrial Property, or any other international agreement, or the domestic laws of the country in which any such application is filed, as may be applicable;

all such rights, title and interest to be held and enjoyed by the above-named Assignee, its successors, legal representatives and assigns to the same extent as all such rights, title and interest would have been held and enjoyed by the Assignor had this assignment and sale not been made.

The undersigned inventor(s) agree to execute all papers necessary in connection with the application(s) and any non-provisional, continuing (continuation, divisional, or continuation-in-part), reissue, reexamination or corresponding application(s) thereof and also to execute separate assignments in connection with such application(s) as the Assignee may deem necessary or expedient.

The undersigned inventor(s) agree to execute all papers necessary in connection with any interference or patent enforcement action (judicial or otherwise) related to the application(s) or any non-provisional, continuing (continuation, divisional, or continuation-in-part), reissue or reexamination application(s) thereof and to cooperate with the Assignee in every way possible in obtaining evidence and going forward with such interference or patent enforcement action.

The undersigned inventor(s) hereby represent that he/she has full right to convey the entire interest herein assigned, and that he/she has not executed, and will not execute, any agreement in conflict therewith.

Page 1 of 2



Sterne, Kessler, Goldstein & Fox P.L.L.C. Appl. No. *To Be Assigned* Atty. Docket No. 5607.2540001(P32038US1)

The undersigned inventor(s) hereby grant the patent practitioners associated with CUSTOMER NUMBER 63975 the power to insert in this assignment any further identification that may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

IN WITNESS WHEREOF, executed by the undersigned inventor(s) on the date(s) opposite the undersigned name(s).

|    | Date:    | Signature of Inventor: | Name:                 |
|----|----------|------------------------|-----------------------|
| 1. | 5,15,17  | 1 no                   | Jarkko L. KNECKT      |
| 2. | 5/5/17   | i Gymall               | Christiaan A. HARTMAN |
| 3. | <u> </u> | v di                   | Guoqing LI            |
| 4. |          | 1                      | Joonsuk KIM           |
| 5. | 5/157/7  | v hets                 | Matthew L. SEMERSKY   |
| 6. | 5 115/13 | 1 10, 1/6              | Oren SHANI            |
| 7. |          | <u> </u>               | Syed A. MUJTABA       |
| 8. | 5/15/    | v en                   | Yong LIU              |

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Sterne, Kessler, Goldstein & Fox P.L.L.C. Appl. No. To Be Assigned Atty. Docket No. 5607.2540001(P32038US1)

#### ASSIGNMENT

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged by each of the undersigned inventor(s): Jarkko L. KNECKT, Christiaan A. HARTMAN, Guoqing LI, Joonsuk KIM, Matthew L. SEMERSKY, Oren SHANI, Syed A. MUJTABA and Yong LIU, the undersigned hereby sell(s) and assign(s) to Apple Inc., a corporation formed under the laws of the State of California, whose mailing address is 1 Infinite Loop, Cupertino, CA 95014 (hereafter referred to as the Assignee), his/her entire right, title and interest, including the right to sue for past infringement and to collect for all past, present and future damages, for the United States of America (as defined in 35 U.S.C. § 100) and throughout the world,

| (a) in the invention(s)    | known as EX        | TENDEL     | RANGE        | NETWOI        | KING      | for wh  | rich an |
|----------------------------|--------------------|------------|--------------|---------------|-----------|---------|---------|
| application(s) for patent  | in the United S    | tates of A | merica has t | een execu     | ted by tl | ne unde | rsigned |
| and has a filing date or a | $371(c)$ date of _ |            | (also        | known         | as l      | Inited  | States  |
| Application No.            | ), in an           | y and all  | applications | thereon,      | in any a  | and all | Letters |
| Patent(s) therefor, and    |                    |            | t is to      | in the second | Salate 1  |         |         |

- (b) in any and all application(s) that claim the benefit of the patent application listed above in part (a), including non-provisional applications, continuing (continuation, divisional, or continuation-in-part) applications, reissues, extensions, renewals and reexaminations of the patent application or Letters Patent therefor listed above in part (a), to the full extent of the term or terms for which Letters Patents issue, and
- (c) in any and all invention(s) described in the patent application listed above in part (a), and in any and all forms of intellectual and industrial property protection derivable from such patent application, and that are derivable from any and all continuing applications, reissues, extensions, renewals and reexaminations of such patent application, including, without limitation, patents, applications, utility models, inventor's certificates, and designs together with the right to file applications therefor; and including the right to claim the same priority rights from any previously filed applications under the International Agreement for the Protection of Industrial Property, or any other international agreement, or the domestic laws of the country in which any such application is filed, as may be applicable;

all such rights, title and interest to be held and enjoyed by the above-named Assignee, its successors, legal representatives and assigns to the same extent as all such rights, title and interest would have been held and enjoyed by the Assignor had this assignment and sale not been made.

The undersigned inventor(s) agree to execute all papers necessary in connection with the application(s) and any non-provisional, continuing (continuation, divisional, or continuation-in-part), reissue, reexamination or corresponding application(s) thereof and also to execute separate assignments in connection with such application(s) as the Assignee may deem necessary or expedient.

The undersigned inventor(s) agree to execute all papers necessary in connection with any interference or patent enforcement action (judicial or otherwise) related to the application(s) or any non-provisional, continuing (continuation, divisional, or continuation-in-part), reissue or reexamination application(s) thereof and to cooperate with the Assignee in every way possible in obtaining evidence and going forward with such interference or patent enforcement action.

The undersigned inventor(s) hereby represent that he/she has full right to convey the entire interest herein assigned, and that he/she has not executed, and will not execute, any agreement in conflict therewith.



Sterne, Kessler, Goldstein & Fox P.L.L.C.
Appl. No. To Be Assigned
Atty. Docket No. 5607.2540001(P32038US1)

The undersigned inventor(s) hereby grant the patent practitioners associated with CUSTOMER NUMBER 63975 the power to insert in this assignment any further identification that may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

IN WITNESS WHEREOF, executed by the undersigned inventor(s) on the date(s) opposite the undersigned name(s).

|    | Date:                             | Signature of Inventor:   |   | Name:                 |
|----|-----------------------------------|--|---|-----------------------|
| 1. |                                   | 1  | ommiguetisijeikisetu  | Jarkko L. KNECKT      |
| 2. | in and the second                 | Landania esta de la composición dela composición de la composición |   | Christiaan A. HARTMAN |
| 3. |                                   | X  |   | Guoqing LI            |
| 4. | 615117                            |  |   | Joonsuk KIM           |
| 5. |                                   |  | territoria de la companya de la comp | Matthew L. SEMERSKY   |
| 6. | 1.1.                              | 1  | erecentationer anathropische statistica.  | Oren SHANI            |
| 7. | animinal simulation of the second |  | ettabeletetalainimeteralainime.   | Syed A. MUJTABA       |
| 8. | 111                               | Assertion of the second | i side side administrative constraints  | Yong LIU              |
|    |                                   |  |   |                       |

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#### ASSIGNMENT

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged by each of the undersigned inventor(s): Jarkko L. KNECKT, Christiaan A. HARTMAN, Guoqing LI, Joonsuk KIM, Matthew L. SEMERSKY, Oren SHANI, Syed A. MUJTABA and Yong LIU, the undersigned hereby sell(s) and assign(s) to Apple Inc., a corporation formed under the laws of the State of California, whose mailing address is 1 Infinite Loop, Cupertino, CA 95014 (hereafter referred to as the Assignee), his/her entire right, title and interest, including the right to sue for past infringement and to collect for all past, present and future damages, for the United States of America (as defined in 35 U.S.C. § 100) and throughout the world,

- (a) in the invention(s) known as **EXTENDED RANGE NETWORKING** for which an application(s) for patent in the United States of America has been executed by the undersigned and has a filing date or a 371(c) date of July 19, 2017 (also known as United States Application No. 15/653,825), in any and all applications thereon, in any and all Letters Patent(s) therefor, and
- (b) in any and all application(s) that claim the benefit of the patent application listed above in part (a), including non-provisional applications, continuing (continuation, divisional, or continuation-in-part) applications, reissues, extensions, renewals and reexaminations of the patent application or Letters Patent therefor listed above in part (a), to the full extent of the term or terms for which Letters Patents issue, and
- (c) in any and all invention(s) described in the patent application listed above in part (a), and in any and all forms of intellectual and industrial property protection derivable from such patent application, and that are derivable from any and all continuing applications, reissues, extensions, renewals and reexaminations of such patent application, including, without limitation, patents, applications, utility models, inventor's certificates, and designs together with the right to file applications therefor; and including the right to claim the same priority rights from any previously filed applications under the International Agreement for the Protection of Industrial Property, or any other international agreement, or the domestic laws of the country in which any such application is filed, as may be applicable;

all such rights, title and interest to be held and enjoyed by the above-named Assignee, its successors, legal representatives and assigns to the same extent as all such rights, title and interest would have been held and enjoyed by the Assignor had this assignment and sale not been made.

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Sterne, Kessler, Goldstein & Fox P.L.L.C. Appl. No. 15/653,825 Atty. Docket No. 5607.2540001(P32038US1)

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IN WITNESS WHEREOF, executed by the undersigned inventor(s) on the date(s) opposite the undersigned name(s).

|    | Date:    | Signature of Inventor;   | Name:                 |
|----|----------|--|-----------------------|
| l. | <u> </u> | 1  | Jarkko L. KNECKT      |
| 2. |          |  | Christiaan A. HARTMAN |
| 3. | :        |  | Guoqing LI            |
| 4. | = 10     | $\frac{1}{2} \sum_{i \in \mathcal{I}_{i}} a_{i} a_{$ | Joonsuk KIM           |
| 5. | <u></u>  | 1  | Matthew L. SEMERSKY   |
| 6. | 10 m / 1 |  | Oren SHANI            |
| 7. | 8,14,17  | Aon Mightle  | Syed A. MUJTABA       |
| 8. |          | V  | Yong LlU              |

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RECORDED: 02/24/2020 REEL: 051903 FRAME: 0644