

PATENT ASSIGNMENT

Electronic Version v1.1
 Stylesheet Version v1.1

| SUBMISSION TYPE: | NEW ASSIGNMENT | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--------------------------------|---------------|-------------------------------|----------------------------|--------------------------------|--------------|-----------------------|-----------------------|-------------------|---------------|------------|--------------|------------|----------------|------------|-------------|------------|--------------|------------|--------------|------------|---------------|------------|--------------|------------|---------------|------------|-------------|------------|
| NATURE OF CONVEYANCE: | ASSIGNMENT | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CONVEYING PARTY DATA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;">Name</th> <th style="width: 30%;">Execution Date</th> </tr> </thead> <tbody> <tr><td>Ho-chul Ji</td><td>09/16/2010</td></tr> <tr><td>Ki-nam Kim</td><td>09/24/2010</td></tr> <tr><td>Yong-woo Hyung</td><td>09/17/2010</td></tr> <tr><td>Kyoung-won Na</td><td>09/16/2010</td></tr> <tr><td>Kyoung-ho Ha</td><td>09/16/2010</td></tr> <tr><td>Yoon-dong Park</td><td>09/16/2010</td></tr> <tr><td>Dae-lok Bae</td><td>09/20/2010</td></tr> <tr><td>Jin-kwon Bok</td><td>09/27/2010</td></tr> <tr><td>Pil-kyu Kang</td><td>09/20/2010</td></tr> <tr><td>Sung-dong Suh</td><td>09/16/2010</td></tr> <tr><td>Seung-gu Kim</td><td>09/16/2010</td></tr> <tr><td>Dong-jae Shin</td><td>09/16/2010</td></tr> <tr><td>In-sung Joe</td><td>09/16/2010</td></tr> </tbody> </table> | | Name | Execution Date | Ho-chul Ji | 09/16/2010 | Ki-nam Kim | 09/24/2010 | Yong-woo Hyung | 09/17/2010 | Kyoung-won Na | 09/16/2010 | Kyoung-ho Ha | 09/16/2010 | Yoon-dong Park | 09/16/2010 | Dae-lok Bae | 09/20/2010 | Jin-kwon Bok | 09/27/2010 | Pil-kyu Kang | 09/20/2010 | Sung-dong Suh | 09/16/2010 | Seung-gu Kim | 09/16/2010 | Dong-jae Shin | 09/16/2010 | In-sung Joe | 09/16/2010 |
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| Ho-chul Ji | 09/16/2010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Kyoung-won Na | 09/16/2010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kyoung-ho Ha | 09/16/2010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Jin-kwon Bok | 09/27/2010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pil-kyu Kang | 09/20/2010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sung-dong Suh | 09/16/2010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Seung-gu Kim | 09/16/2010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dong-jae Shin | 09/16/2010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| In-sung Joe | 09/16/2010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RECEIVING PARTY DATA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Name:</td> <td>Samsung Electronics Co., Ltd.</td> </tr> <tr> <td>Street Address:</td> <td>416, Maetan-dong, Yeongtong-gu</td> </tr> <tr> <td>City:</td> <td>Suwon-si, Gyeonggi-do</td> </tr> <tr> <td>State/Country:</td> <td>REPUBLIC OF KOREA</td> </tr> </table> | | Name: | Samsung Electronics Co., Ltd. | Street Address: | 416, Maetan-dong, Yeongtong-gu | City: | Suwon-si, Gyeonggi-do | State/Country: | REPUBLIC OF KOREA | | | | | | | | | | | | | | | | | | | | |
| Name: | Samsung Electronics Co., Ltd. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Street Address: | 416, Maetan-dong, Yeongtong-gu | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| City: | Suwon-si, Gyeonggi-do | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| State/Country: | REPUBLIC OF KOREA | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PROPERTY NUMBERS Total: 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Property Type</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>Application Number:</td> <td>12911415</td> </tr> </tbody> </table> | | Property Type | Number | Application Number: | 12911415 | | | | | | | | | | | | | | | | | | | | | | | | |
| Property Type | Number | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Application Number: | 12911415 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CORRESPONDENCE DATA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Fax Number: (617)742-7774</p> <p><i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i></p> <p>Phone: 617-994-4900</p> <p>Email: mail@millsonello.com</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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PATENT
REEL: 025189 FRAME: 0875

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|---------------------|-----------------------------|
| Correspondent Name: | MILLS & ONELLO LLP |
| Address Line 1: | ELEVEN BEACON STREET |
| Address Line 2: | SUITE 605 |
| Address Line 4: | BOSTON, MASSACHUSETTS 02108 |

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| ATTORNEY DOCKET NUMBER: | SAM-1457 |
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| NAME OF SUBMITTER: | Steven M. Mills |
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A S S I G N M E N T

We, Ho-chul Ji, of 411-1102, Nokwon Maeul Sacheonnyeong Greenville 4-danji Apt., Singal-dong, Giheung-gu, Yongin-si, Gyeonggi-do, Republic of Korea; Ki-nam Kim, of 109-1206, Hanbo Mido Apt., 511, Daechi-dong, Gangnam-gu, Seoul, Republic of Korea; Yong-woo Hyung, of 520-1404, Samsung 5-cha Apt., Pungdeokcheon 2-dong, Suji-gu, Yongin-si, Gyeonggi-do, Republic of Korea; Kyoung-won Na, of Rm. 101, 70-4, Ogeum-dong, Songpa-gu, Seoul, Republic of Korea; Kyoung-ho Ha, of 262-9, Nonhyeon-dong, Gangnam-gu, Seoul, Republic of Korea; Yoon-dong Park, of Samsung Advanced Institute of Technology, Nongseo-dong, Giheung-gu, Yongin-si, Gyeonggi-do, Republic of Korea; Dae-lok Bae, of 212-2903, Park Rio Apt., Jamsil 4-dong, Songpa-gu, Seoul, Republic of Korea; Jin-kwon Bok, of 244-1204, Hwanggol Maeul 2-danji Ssangyong Apt., Yeongtong-dong, Yeongtong-gu, Suwon-si, Gyeonggi-do, Republic of Korea; Pil-kyu Kang, of 610-1209, Saetbyeol Hanyang Apt., Daran-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Republic of Korea; Sung-dong Suh, of 5F, Seongho Bldg., 592-9, Sinsa-dong, Gangnam-gu, Seoul, Republic of Korea; Seong-gu Kim, of 288-36, Pyeongtaek-dong, Pyeongtaek-si, Gyeonggi-do, Republic of Korea; Dong-jae Shin, of 323-304, III-Zium Apt., Jamsil-dong, Songpa-gu, Seoul, Republic of Korea; and In-sung Joe, of 101-904, Dogok Rexle Apt., Dogok 2-dong, Gangnam-gu, Seoul, Republic of Korea; having invented improvements in OPTICAL WAVEGUIDE AND COUPLER APPARATUS AND METHOD OF MANUFACTURING THE SAME identified as Attorney Docket No. SAM-1457, described in an application for Letters Patent of the United States, which application was filed on October 25, 2010, and assigned Serial No. 12/911,415 (in the event that the execution date, filing date and/or Serial No. are not entered above at the time we execute this document, and if such information is deemed necessary, we hereby authorize and request our attorneys at Mills & Onello, LLP, Eleven Beacon Street, Suite 605, Boston, Massachusetts 02108, USA, to insert above the execution date, filing date and/or Serial No. of said application, when known), for good and valuable consideration, receipt of which is hereby acknowledged from Samsung Electronics Co., Ltd., a Korean corporation having a place of business at 416, Maetan-dong, Yeongtong-gu, Suwon-si, Gyeonggi-do, Republic of Korea (and hereinafter called the Assignee, which term shall include its successors and assigns), do hereby sell, assign and transfer unto the Assignee our entire right, title, and interest in and throughout the United States of America (including its territories and dependencies) and all countries foreign thereto, in and to and under said application (which term shall include hereinafter where the context so admits all divisional, continuing, reissue and other patent applications based thereon) and the inventions (which term shall include each and every such invention, or part thereof) therein described, and any and all patents and like rights of exclusion (including extensions thereof) of any country which may be granted on or for said inventions or on said application;

And for the same consideration We do also hereby sell, assign, and transfer unto the Assignee, all our rights under the International Convention for the Protection of Industrial Property, the Patent Cooperation Treaty, and all other treaties of like purpose in respect of said inventions and said application, and We do hereby authorize the Assignee to apply in our name or its own name or its designee for patents and like rights of exclusion on or for said inventions in all countries, claiming (if the Assignee so desires) the priority of the filing date of said application under the provisions of said Convention, Treaty or any such other Convention or Treaty;

And for the same consideration, We do hereby agree for ourselves and for our heirs, executors, and administrators, promptly upon request of the Assignee to execute and deliver without further compensation any power of attorney, assignment, original, divisional, continuing, reissue or other application or applications for patent or patents or like rights of exclusion of any country, or other lawful documents and any further assurances that may be deemed necessary or desirable by the Assignee, fully to secure to it said right, title, and interest as aforesaid in and to said inventions, applications, and said several patents and like rights of exclusion (including extensions thereof) or any of them, all, however, at the expense of the Assignee, its successors, or assigns;



And We do hereby authorize and request the Commissioner of Patents and Trademarks of the United States of America and the corresponding Official of each country foreign thereto to issue to the Assignee, any and all patents and like rights of exclusion which may be granted in any country upon said United States application on or for said inventions;

And We do hereby covenant for ourselves and our legal representatives and agree with the Assignee, that We have granted no right or license to make, use, or sell said inventions to anyone except the Assignee, that prior to the execution of this deed our right, title, and interest in and to said inventions has not been otherwise encumbered by us, and that We have not executed and will not execute any instruments in conflict herewith.

First or Sole Inventor:

Signature: Ji-hochul
Ho-chul Ji

Date: 2010. 9. 16.

Second Joint Inventor:

Signature: Ki-nam Kim
Ki-nam Kim

Date: 9/24/2010

Third Joint Inventor:

Signature: Yong-woo Hyung
Yong-woo Hyung

Date: September 17, 2010

Fourth Joint Inventor:

Signature: Kyoung-won Na
Kyoung-won Na

Date: 2010-9. 16

Fifth Joint Inventor:

Signature: Kyoung-ho Ha Date: 2010. 9. 16.
Kyoung-ho Ha

Sixth Joint Inventor:

Signature: Yoon-dong Park Date: 2010. 9. 16.
Yoon-dong Park

Seventh Joint Inventor:

Signature: Dae-lok Bae Date: 2010. 9. 16.
Dae-lok Bae

Eighth Joint Inventor:

Signature: Jin-kwon Bok Date: 2010. 9. 21.
Jin-kwon Bok

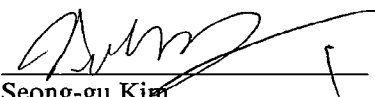
Ninth Joint Inventor:

Signature: Pil-kyu Kang Date: 2010. 9. 16.
Pil-kyu Kang

Tenth Joint Inventor:

Signature: Sung-dong Suh Date: 2010. 9. 16.
Sung-dong Suh

Eleventh Joint Inventor:

Signature: 
Seong-gu Kim


Date: 2010. 9. 16.

Twelfth Joint Inventor:

Signature: DONG-JAE SHIN
Dong-jae Shin

Date: 2010. 9. 16.

Thirteenth Joint Inventor:

Signature: 
In-sung Joe

Date: 2010. 9. 16.

ATTORNEY REFERENCE NO.: SAM-1457
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