

PATENT ASSIGNMENT COVER SHEET

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| SUBMISSION TYPE: | NEW ASSIGNMENT |
| NATURE OF CONVEYANCE: | ASSIGNMENT |
| CONVEYING PARTY DATA | |
| Name | Execution Date |
| MING-CHYI LIU | 09/24/2014 |
| RECEIVING PARTY DATA | |
| Name: | TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD. |
| Street Address: | NO. 8, LI-HSIN RD. 6 |
| Internal Address: | SCIENCE-BASED INDUSTRIAL PARK |
| City: | HSIN-CHU |
| State/Country: | TAIWAN |
| Postal Code: | 300-77 |
| PROPERTY NUMBERS Total: 1 | |
| Property Type | Number |
| Application Number: | 15942512 |
| CORRESPONDENCE DATA | |
| Fax Number: | (214)200-0853 |
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| ATTORNEY DOCKET NUMBER: | 20140660 / 24061.3440US02 |
| NAME OF SUBMITTER: | JANIE MARTINEZ-HOLM |
| SIGNATURE: | /Janie Martinez-Holm/ |
| DATE SIGNED: | 04/05/2018 |
| Total Attachments: 1 | |
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ASSIGNMENT

WHEREAS, Ming-Chyi LIU
 hereafter referred to as ASSIGNOR, has/have invented certain new and useful improvements as described and set forth in the below identified application for United States Letters Patent:

Title: IMAGE SENSOR AND METHOD FOR FORMING THE SAME
 Filed: 08/22/2014 Serial No. 14/466,308
 Executed on: 09/24/2014

WHEREAS, Taiwan Semiconductor Manufacturing Co., Ltd. of No.8, Li-Hsin Road, 6, Science-Based Industrial Park, Hsin-Chu, Taiwan 300-77, R.O.C. hereinafter referred to as ASSIGNEES, is desirous of acquiring ASSIGNOR'S interest in the said invention and application and in any U.S. Letters Patent which may be granted on the same;

NOW, THEREFORE, TO ALL WHOM IT MAY CONCERN: Be it known that, for good and valuable consideration, receipt of which is hereby acknowledged by Assignor, Assignor has/have sold, assigned and transferred, and by these presents does/do sell, assign and transfer unto the said Assignee, and Assignee's successors and assigns, all his/her/their rights, title and interest in and to the said invention and application and all future improvements thereon, and in and to any Letters Patent which may hereafter be granted on the same in the United States, the said interest to be held and enjoyed by said Assignee as fully and exclusively as it would have been held and enjoyed by said Assignor had this Assignment and transfer not been made, to the full end and term of any Letters Patent which may be granted thereon, or of any division, renewal, continuation in whole or in part, substitution, conversion, reissue, prolongation or extension thereof.

Assignor further agrees/agree that he/she/they will, without charge to said Assignee, but at Assignee's expense, cooperate with Assignee in the prosecution of said application and/or applications, execute, verify, acknowledge and deliver all such further papers, including applications for Letters Patent and for the reissue thereof, and instruments of assignment and transfer thereof, and will perform such other acts as Assignee lawfully may request, to obtain or maintain Letters Patent for said invention and improvement, and to vest title thereto in said Assignee, or Assignee's successors and assigns.

IN TESTIMONY WHEREOF, Assignor has/have signed his/her/their name(s) on the date(s) indicated.

2014/9/24 Ming-Chyi Liu
 Date Name: Ming-Chyi LIU (Last name: LIU)