| FORM PTO-1595<br>(Rev. 6-93)<br>OMB No. 0651-0011 (exp. 4/94)  | ·REC                 | 11-20-20  | SHEET U.S. DEPARTMENT OF COMMERCE Patent and Trademark Office  |  |  |
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| To the Honorable Commis  | sioner of Pa         |   | iched original documents or copy thereof.  |  |  |
| 1. Name of conveying party(ies):   |                      | 1022874   | 2. Name and address of receiving party(ies):   |  |  |
| Young-Doo Yoo<br>Hong-shin Jun   | \\ .                 | 14.02   | Name: Samsung Electronics, Co., Ltd.  Internal Address:  |  |  |
| Additional name(s) of conveying party(ies  | ) attached?          | □ Yes ⊠ No  | Internal Address.  |  |  |
|  | ranached: L          | 1 res 🖾 No  | Control of the Contro |  |  |
| 3. Nature of conveyance:   |                      |   | Street Address: 416, Maetan-dong, Paldal-gu,   |  |  |
|  |                      |   | Suwon-city, Kyungki-do, Republic of Korea  |  |  |
|  |                      | Merger  |  |  |  |
| ☐ Security Agreement   |                      | Change of Name  | City: State ZIP  |  |  |
| □ Other  | 25.2002              |   | - 10 F V- 5 N  |  |  |
|  | r 25, 2002           | - 11 / 12 / 12 / 12   | Additional name(s) & address attached?   |  |  |
| 4. Application number(s) or pater If this document is being filed tog A. Patent Application No.(s) 09/981,456 filed October 17, 20 | gether with a new a  | application, the execution application, the execution application | B. Patent No.(s)   |  |  |
| 5. Name and address of party to whom correspondence concerning document should be mailed:  |                      |   | 6. Total number of applications and registrations involved   |  |  |
| Name: Anthony P. Onello, Jr.   |                      |   |  |  |  |
| Internal Address: MILLS & ONELLO LLP   |                      |   | 7. Total fee (37 CFR 3.41) \$40.00   |  |  |
| <del></del>  |                      |   | ⊠ Enclosed   |  |  |
|  |                      |   | ☐ Authorized to be charged to deposit account  |  |  |
| Street Address: Eleven   | Beacon Street, Su    | ite 605   | 8. Deposit Account Number:   |  |  |
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| 9. Statement and signature: To the best of my knowledge and document.  | belief, the foregoin | eg information is tru   | te and correct and any attached copy is a true copy of the original $oldsymbol{\lambda}$   |  |  |
| Anthony P. Onello, Jr., Reg.   | No. 38,572           | (Lath   | Denella Abarulus 2007 -  |  |  |
| Name of Person Signing Signature Date  |                      |   |  |  |  |
| Total number of pages including cover sheet, attachments, and document 3   |                      |   |  |  |  |
| 11/19/2002 LMUELLER 00000166 09981456  |                      |   |  |  |  |
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Mail documents to be recorded with required cover sheet information to:

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Washington, D.C. 20231

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Docket No.: SAM-0246

## ASSIGNMENT

We, Young-Doo Yoo, of 65-206, Kangdong Apt., Amsa-dong, Kangdong-gu, Seoul, Republic of Korea and Hong-shin Jun, of 1102-1001, Mujigac-maeul Keumkang Apt, 213, Kumi-dong, Bundang-gu, Scongnam-city, Kyungki-do, Republic of Korea, having invented improvements in SEMICONDUCTOR DEVICE INCLUDING BUILT-IN REDUNDANCY ANALYSIS CIRCUIT FOR SIMULTANEOUSLY TESTING AND ANALYZING FAILURE OF A PLURALITY OF MEMORIES AND METHOD FOR ANALYZING THE FAILURE OF THE PLURALITY OF MEMORIES described in an application for Letters Patent of the United States Serial Number 09/981,456, filed October 17, 2001, for good and valuable consideration, receipt of which is hereby acknowledged from Samsung Electronics, Ltd., a Korean corporation having a place of business at 416, Mactan-dong, Paldal-gu, Suwon-eity, Kyungki-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 Assignce, that We have granted no right or license to make, use, or sell said inventions to anyone except the Assignce, 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.

-1-

| First or Sole | Inventor:  |               |                     |
|---------------|------------|---------------|---------------------|
|               | Signature: | Young-Doo Yoo | Date:               |
| Second Joint  | Inventor:  |               |                     |
|               | Signature: | Hongshin Jun  | Date: Oct. 25, 2002 |

DOCKET NO. SAM-0246 ESAM0200assignment2 wp4

**RECORDED: 11/08/2002** 

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**PATENT REEL: 013491 FRAME: 0929**