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U.S. DEPARTMENT OF COMMERCE

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To the Director of the U.S. Patent and Tradem



103611003

1. Name of conveying party(ies):

- 1) Kang Eun LEE
- 2) Do Hyung KIM

2. Name and Address of receiving party(ies):

**SAMSUNG ELECTRONICS CO., LTD.**  
**416, Maetan-dong, Yeongtong-gu,**  
**Suwon-si, Gyeonggi-do 443-742**  
**Republic of Korea**

3. Nature of conveyance:

- |                                     |                    |       |                |
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| <input checked="" type="checkbox"/> | Assignment         | _____ | Merger         |
| _____                               | Security Agreement | _____ | Change of Name |
| _____                               | Other:             | _____ |                |

Execution Date(s): 1) - 2) October 26, 2010

4. Application number(s) or patent number(s):

This document is being filed together with a new application.

OR

This document is being filed after filing of the application:

- (a) Patent Application No(s). , filed ; or
- (b) Patent No(s). , issued .

5. Name and address of party to whom correspondence concerning document should be mailed:

**STAAS & HALSEY LLP**  
**Attention: John C. Garvey**  
**1201 New York Ave., N.W., Suite 700**  
**Washington, D.C. 20005**

Our Docket: **1911.1343**

6. Total number of applications and patents involved:   1  

7. Total fee (37 CFR 3.41). . . . . (\$ 40.00 per Patent or Application in Assignment)

- Enclosed
- Authorized to be charged to deposit account.

8. Deposit Account No.: 19-3935 (Any underpayment is authorized to be charged to this Deposit Account)  
(Attach duplicate copy of this page if paying by deposit account)

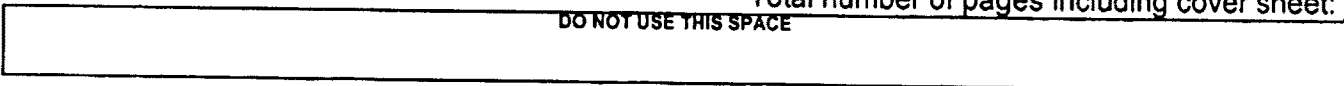
John C. Garvey, Reg. No. 28,607  
Name of Person Signing

Signature

November 1, 2010  
Date

Total number of pages including cover sheet:   2  

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**PATENT**  
**REEL: 025304 FRAME: 0952**

# U.S. ASSIGNMENT

5411 1/07

IN CONSIDERATION of the sum of One Dollar (\$1.00), and of other good and valuable consideration paid to the undersigned inventor(s) (hereinafter, "ASSIGNOR") by

(Insert Name(s) & Address(es) of ASSIGNEE(S))

SAMSUNG ELECTRONICS CO., LTD.  
416, Maetan-dong, Yeongtong-gu,  
Suwon-si, Gyeonggi-do 443-742  
Republic of Korea

(hereinafter, "ASSIGNEE"), the receipt of which is hereby acknowledged, the undersigned ASSIGNOR hereby sells, assigns and transfers to ASSIGNEE the entire and exclusive right, title and interest to the invention entitled  
(Title of Invention)

## APPARATUS, METHOD AND COMPUTER-READABLE MEDIUM PRODUCING VERTICAL DIRECTION VIRTUAL CHANNEL

relating to International Patent Application PCT/JP \_\_\_\_\_ / \_\_\_\_\_ and/or for which application for Letters Patent of the United States was executed on even date herewith or, if not so executed, was:

(a) executed on : October 26, 2010

(Insert date of execution of application, if not concurrent)

(b) filed on ,

Serial No. To Be Assigned;

Any registered attorney of STAAS & HALSEY LLP, 1201 New York Avenue, N.W., Suite 700 Washington, D.C. 20005 (202/434-1500) is hereby authorized to insert in (b) the specified data, when known.

and to said application and all Letters Patent(s) of the United States granted on said application and any continuation, division, renewal, substitute, reissue or reexamination application based thereon, for the full term or terms for which the said Letters Patent(s) may be granted and including any extensions thereof (collectively, hereinafter, "said application(s) and Letters Patent(s)").

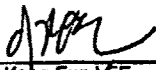

The ASSIGNOR agree(s), when requested by said ASSIGNEE and without charge to but at the expense of said ASSIGNEE, to do all acts which the ASSIGNEE may deem necessary, desirable or expedient, for securing, maintaining and enforcing protection for said invention, including in the preparation and prosecution of said application(s) and the issuance of said Letters Patent(s), in any interference, reissue, reexamination, or public use proceeding, and in any litigation or other legal proceeding which may arise or be declared in relation to same, such acts to include but not be limited to executing all papers, including separate assignments and declarations, taking all rightful oaths, providing sworn testimony, and obtaining and producing evidence.

IN WITNESS WHEREOF, the undersigned inventor(s) has (have) affixed his/her/their signature(s).

(Typed Name & Signature of Inventor(s))

(Date)

(Typed Name & Signature of Witness(es))

1)	 Kang Eun LEE	<u>26/10/2010</u>	_____
2)	 Do Hyung KIM	<u>26/10/2010</u>	_____