

## PATENT ASSIGNMENT

Electronic Version v1.1  
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SUBMISSION TYPE:	NEW ASSIGNMENT								
NATURE OF CONVEYANCE:	ASSIGNMENT								
CONVEYING PARTY DATA									
<table border="1"><thead><tr><th>Name</th><th>Execution Date</th></tr></thead><tbody><tr><td>Tae-Young KIM</td><td>11/17/2011</td></tr><tr><td>Hyun-Kyu YU</td><td>11/17/2011</td></tr><tr><td>Jae-Weon CHO</td><td>11/17/2011</td></tr></tbody></table>		Name	Execution Date	Tae-Young KIM	11/17/2011	Hyun-Kyu YU	11/17/2011	Jae-Weon CHO	11/17/2011
Name	Execution Date								
Tae-Young KIM	11/17/2011								
Hyun-Kyu YU	11/17/2011								
Jae-Weon CHO	11/17/2011								
RECEIVING PARTY DATA									
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"><thead><tr><th>Property Type</th><th>Number</th></tr></thead><tbody><tr><td>Application Number:</td><td>13302182</td></tr></tbody></table>		Property Type	Number	Application Number:	13302182				
Property Type	Number								
Application Number:	13302182								
CORRESPONDENCE DATA									
Fax Number:	(202)403-3587								
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<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent via US Mail.</i>									
Correspondent Name:	Jefferson IP Law, LLP								
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Address Line 2:	Suite 420								
Address Line 4:	Washington, DISTRICT OF COLUMBIA 20036								
ATTORNEY DOCKET NUMBER:	0202-0621								
NAME OF SUBMITTER:	Raymond B. Persino								
Total Attachments: 3 source=0202-0621AssignmentAsFiled#page1.tif source=0202-0621AssignmentAsFiled#page2.tif source=0202-0621AssignmentAsFiled#page3.tif									

OP \$40.00 13302182

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PATENT  
REEL: 027266 FRAME: 0430

## RECORDATION FORM COVER SHEET PATENTS ONLY

To the Director of the U.S. Patent and Trademark Office: Please record the attached documents or the new address(es) below.

### 1. Name of conveying party(ies)

1) Tae-Young KIM, 2) Hyun-Kyu YU, and 3) Jae-Weon CHO

Additional name(s) of conveying party(ies) attached? ☐ Yes ☒ No

### 3. Nature of conveyance/Execution Date(s):

Execution Date(s) November 17, 2011

- ☒ Assignment ☐ Merger  
☐ Security Agreement ☐ Change of Name  
☐ Joint Research Agreement  
☐ Government Interest Assignment  
☐ Executive Order 9424, Confirmatory License  
☐ Other \_\_\_\_\_

### 2. Name and address of receiving party(ies)

Name: Samsung Electronics Co., Ltd.

Internal Address: \_\_\_\_\_

Street Address: 416, Maetan-dong, Yeongtong-gu

City: Suwon-si, Gyeonggi-do

State: \_\_\_\_\_

Country: Republic of Korea Zip: \_\_\_\_\_

Additional name(s) & address(es) attached? ☐ Yes ☒ No

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

☐ This document is being filed together with a new application.

A. Patent Application No.(s)

13/302,182

B. Patent No.(s)

Additional numbers attached? ☐ Yes ☒ No

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

Name: Jefferson IP Law, LLP

Internal Address: Raymond B. Persino

Street Address: 1130 Connecticut Ave., NW, Suite 420

City: Washington

State: DC Zip: 20036

Phone Number: 202-293-0804

Fax Number: 202-403-3587

Email Address: usdocketing@jeffersonip.com

### 6. Total number of applications and patents involved: One

### 7. Total fee (37 CFR 1.21(h) & 3.41) \$ \_\_\_\_\_

- ☐ Authorized to be charged by credit card  
☐ Authorized to be charged to deposit account  
☐ Enclosed  
☐ None required (government interest not affecting title)

### 8. Payment Information

a. Credit Card Last 4 Numbers \_\_\_\_\_  
Expiration Date \_\_\_\_\_

b. Deposit Account Number \_\_\_\_\_

Authorized User Name \_\_\_\_\_

### 9. Signature:

/Raymond B. PERSINO/ Reg. No. 58,082

Signature

November 22, 2011

Date

Raymond B. Persino

Name of Person Signing

Total number of pages including cover sheet, attachments, and documents:

3

## **Assignment**

**WHEREAS**, the following inventors, namely 1) **Tae-Young KIM**, 2) **Hyun-Kyu YU**, and 3) **Jae-Weon CHO**, all citizens of the Republic of Korea and residing respectfully at 1) #308-103, Kkachi Maeul Sinwon Apt., Gumi-dong, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea, 2) #706-1001, Hyundai Hill State, Yeongdeok-dong, Giheung-gu, Yongin-si, Gyeonggi-do, Republic of Korea, and 3) #110-702, Saetbyeong Maeul Life Apt., Bundang-dong, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea (hereinafter called "Assignors"), having made or discovered certain new, useful and non-obvious improvements in an invention having a working title of:

### **APPARATUS AND METHOD FOR ADAPTIVE BEAM-FORMING IN WIRELESS COMMUNICATION SYSTEM,**

for which a United States Patent Application is being filed concurrently herewith or, if not being concurrently filed, was filed on November 22, 2011, and assigned Serial No. 13/302,182; and,

**WHEREAS**, **Samsung Electronics Co., Ltd.**, a corporation duly organized under the laws of the Republic of Korea, located and doing business at 416, Maetan-dong, Yeongtong-gu, Suwon-si, Gyeonggi-do, Republic of Korea (hereinafter called "Assignee"), is desirous of acquiring the entire right, title and interest therein;

**NOW, THEREFORE, BE IT KNOWN** that for and in good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignors do hereby sell, assign and transfer unto said Assignee the entire and exclusive worldwide right, title and interest in and to all said inventions and discoveries disclosed in said application, and in and to said application, any and all substitutions, divisions, provisionals, conversions of provisionals and continuations thereof, and in and to all Letters Patent, United States and foreign, that may be granted for said inventions and discoveries, and in and to all extensions, renewals and reissues thereof; and the right to file any foreign application and/or claim priority under the provisions of any international treaty or convention arising from this application or any divisional, continuing, substitute or reissue application therefrom. The aforesaid assignment includes the right in and to all income, royalties, damages and payments, now or hereafter due or payable with respect to any Letters Patent which may be granted, and in and to all causes of action (either in law or in equity), and the right to sue, counterclaim, and recover for past, present and future infringement of the rights assigned or to be assigned under this Assignment, as fully and entirely as the same would have been held and enjoyed by Assignors if this sale, assignment and transfer had not been made.

Assignors covenant and agree, without further compensation to said Assignors but at Assignee's expense:

- a. to execute:
  - i. all papers to be used in connection with this application and any divisional, continuing, substitute or reissue application thereof, as the Assignee may deem necessary or expedient, and
  - ii. all papers in connection with any interference, litigation, mediation, arbitration or other proceeding relating to this application or any divisional, continuing, substitute or reissue application thereof, as may be necessary or expedient;
- b. to cooperate with the Assignee in every way possible in obtaining evidence and going forward in any interference, litigation, mediation, arbitration or other proceeding relating to said invention, said application and any divisional, continuing, substitute or reissue application thereof;
- c. to communicate to the Assignee any facts relating to said invention, said application and any divisional, continuing, substitute or reissue application thereof, including evidence

Attorney Docket No.: 0202-0621  
Client Docket No.: SP11388-US\_DMC

- for any interference, litigation, mediation, arbitration or other proceeding relating to said invention, whenever requested;
- d. to testify in any interference, litigation, mediation, arbitration or other proceeding relating to said invention, said application and any divisional, continuing, substitute or reissue application thereof whenever requested; and
  - e. to perform all other affirmative acts which may be necessary or desirable to secure full and complete protection of the inventions and discoveries or that may be necessary or desirable to vest in Assignee the complete title to the inventions and discoveries and Letters Patent hereby conveyed and to enable Assignee to record title.

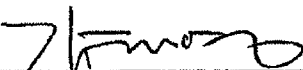
Assignors hereby authorize and request the United States Patent and Trademark Office or any other issuing authority to issue any and all Letters Patent that may be granted upon this invention and/or this application or any divisional, continuing, substitute or reissue application thereof to the Assignee, its legal representatives, successors and assigns.

Assignors each hereby represent, covenant and warrant that he or she has the full right to convey the entire right, title and interest by this instrument, free of any encumbrances and that no other agreement has been or will be executed in conflict herewith.

The provisions of this Assignment are binding upon each Assignor's heirs, legal representatives and/or administrators and assigns.

Assignors hereby grant to the law firm of Jefferson IP Law, LLP of Washington, DC and its attorneys and agents as associated with Customer No. 68103 the authority and power to insert on this instrument any further identification which may be necessary or desirable for purposes of recordation in the United States Patent and Trademark Office or a Patent Office of any foreign country.

Signature of First Inventor:

  
Tae-Young KIM


November 17, 2011  
Date

Signature of Second Inventor:

  
Hyun-Kyu YU

November 17, 2011  
Date

Signature of Third Inventor:

  
Jae-Weon CHO

November 17, 2011  
Date