

**PATENT ASSIGNMENT**

Electronic Version v1.1  
 Stylesheet Version v1.1

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT

**CONVEYING PARTY DATA**

Name	Execution Date
Junil Choi	02/15/2011
Bruno Clerckx	02/15/2011
Ki Il Kim	02/15/2011
David J. Love	02/15/2011
Tae Joon Kim	02/15/2011

**RECEIVING PARTY DATA**

<b>Name:</b>	Samsung Electronics Co., Ltd.
<b>Street Address:</b>	416, Maetan-dong, Yeongtong-gu
<b>City:</b>	Suwon-si, Gyeonggi-do
<b>State/Country:</b>	REPUBLIC OF KOREA
<b>Postal Code:</b>	443-742

<b>Name:</b>	Purdue Research Foundation
<b>Street Address:</b>	1281 Win Hentschel Blvd.
<b>City:</b>	West Lafayette
<b>State/Country:</b>	INDIANA
<b>Postal Code:</b>	47906-4182

**PROPERTY NUMBERS Total: 1**

Property Type	Number
<b>Application Number:</b>	12979479

**CORRESPONDENCE DATA**

**Fax Number:** (202)315-3758  
*Correspondence will be sent via US Mail when the fax attempt is unsuccessful.*  
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**Correspondent Name:** North Star Intellectual Property Law, PC

**OP \$40.00 12979479**

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ATTORNEY DOCKET NUMBER:	12000.SMG.0698
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NAME OF SUBMITTER:	Nicholas M. Stabler
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<p>Total Attachments: 9 source=FPE-09-1198-US_ASSIGNMENT#page1.tif source=FPE-09-1198-US_ASSIGNMENT#page2.tif source=FPE-09-1198-US_ASSIGNMENT#page3.tif source=FPE-09-1198-US_ASSIGNMENT#page4.tif source=FPE-09-1198-US_ASSIGNMENT#page5.tif source=FPE-09-1198-US_ASSIGNMENT#page6.tif source=FPE-09-1198-US_ASSIGNMENT#page7.tif source=FPE-09-1198-US_ASSIGNMENT#page8.tif source=FPE-09-1198-US_ASSIGNMENT#page9.tif</p>
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JOINT INVENTION  
(U.S. Rights Only)

**ASSIGNMENT**

WHEREAS, we, the below named inventors, (hereinafter referred to as assignors, have made an invention entitled:

**MULTIPLE-INPUT MULTIPLE-OUTPUT (MIMO) COMMUNICATION SYSTEM  
USING A CODEBOOK AND METHOD OF DESIGNING THE CODEBOOK**

for which we executed an application for United States Letters Patent concurrently herewith or filed an application for United States Letters Patent on December 28, 2010 Application No. 12/979,479 ; and

**WHEREAS,**

**SAMSUNG ELECTRONICS CO., LTD.**, a Republic of Korea corporation having principal executive office(s) or place of business at:

416, Maetan-dong, Yeongtong-gu, Suwon-si, Gyeonggi-do 443-742, Republic of Korea, and

(hereinafter referred to as assignees), are each desirous of securing the entire right, title, and interest in and to this invention, the application for United States Letters Patent on this invention, and the Letters Patent to be issued upon this application;

**NOW THEREFORE**, be it known that, for good and valuable consideration the receipt of which from assignees is hereby acknowledged, we, as assignors, have sold, assigned, transferred, and set over, and do hereby sell, assign, transfer, and set over unto the assignees, their lawful successors and assigns, our entire right, title, and interest in and to this invention and this application, and all divisions, and continuations thereof, and all Letters Patent of the United States which may be granted thereon, and all reissues thereof; and we hereby authorize and request the Commissioner of Patents and Trademarks of the United States to issue all Letters Patent for this invention to assignees, their successors and assigns, in accordance with the terms of this Assignment;

**AND, WE HEREBY** further covenant and agree that we will, without further consideration, communicate with assignees, their successors and assigns, any facts known to us respecting this invention and testify in any legal proceeding, sign all lawful papers when called upon to do so, execute and deliver all papers that may be necessary or desirable to perfect the

title to this invention in said assignees, their successors and assigns, execute all divisional, continuation, and reissue applications, make all rightful oaths and generally do everything possible to aid assignees, their successors and assigns, to obtain and enforce proper patent protection for this invention in the United States, it being understood that any expense incident to the execution of such papers and/or the rendering of such aid shall be borne by the assignees, their successors and assigns.

AND, WE HEREBY authorize and request the attorneys we have empowered in the Declaration and Power of Attorney in this application, to insert the filing date and application number of said application above in the lines provided when known.



SAMSUNG ELECTRONICS

07037094





Third Assignor:

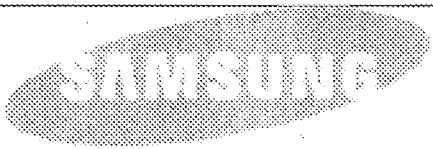
KIM, Ki Il

#102-1506, Nokwon Maeul Sacheonmyeon Greenville 1-danji Apt.,  
Singal-dong, Giheung-gu, Yongin-si,  
Gyeonggi-do 446-586, Republic of Korea

Citizenship: Republic of Korea

IN WITNESS WHEREOF, I hereto set my hand and seal this 15<sup>th</sup> day of  
February, 2011

Signature:   
KIM, Ki Il



City of Gyeonggi-do :

Country of Republic of Korea : **SAMSUNG ELECTRONICS**

Before me this \_\_\_\_\_ day of \_\_\_\_\_, 2011, personally appeared  
known to me to be the person whose name is subscribed to the foregoing Assignment and  
acknowledged that they executed the same as his free act and deed for the purposes therein  
contained.

\_\_\_\_\_  
Witness or Notary Public

JOINT INVENTION  
(U.S. Rights Only 65559.00.US)

**ASSIGNMENT**

WHEREAS, we, the below named inventors, (hereinafter referred to as assignors, have made an invention entitled:

**MULIPLE-INPUT MULTIPLE-OUTPUT (MIMO) COMMUNICATION SYSTEM  
USING A CODEBOOK AND METHOD OF DESIGNING THE CODEBOOK**

for which we executed an application for United States Letters Patent concurrently herewith or filed an application for United States Letters Patent on December 28, 2010 Application No. 12/979,479; and

WHEREAS,

**PURDUE RESEARCH FOUNDATION**, a statutory body corporate formed and existing under the Indiana Foundation or Holding Companies Act of 1921 having its principal executive office(s) or place of business at: 1281 Win Hentschel Blvd. West Lafayette, Indiana 47906-4182, U.S.A., (hereinafter referred to as assignees), are each desirous of securing the entire right, title, and interest in and to this invention, the application for United States Letters Patent on this invention, and the Letters Patent to be issued upon this application;

**NOW THEREFORE**, be it known that, for good and valuable consideration the receipt of which from assignees is hereby acknowledged, we, as assignors, have sold, assigned, transferred, and set over, and do hereby sell, assign, transfer, and set over unto the assignees, their lawful successors and assigns, our entire right, title, and interest in and to this invention and this application, and all divisions, and continuations thereof, and all Letters Patent of the United States which may be granted thereon, and all reissues thereof; and we hereby authorize and request the Commissioner of Patents and Trademarks of the United States to issue all Letters Patent for this invention to assignees, their successors and assigns, in accordance with the terms of this Assignment;

**AND, WE HEREBY** further covenant and agree that we will, without further consideration, communicate with assignees, their successors and assigns, any facts known to us respecting this invention and testify in any legal proceeding, sign all lawful papers when called upon to do so, execute and deliver all papers that may be necessary or desirable to perfect the title to this invention in said assignees, their successors and assigns, execute all divisional,



continuation, and reissue applications, make all rightful oaths and generally do everything possible to aid assignees, their successors and assigns, to obtain and enforce proper patent protection for this invention in the United States, it being understood that any expense incident to the execution of such papers and/or the rendering of such aid shall be borne by the assignees, their successors and assigns.

AND, WE HEREBY authorize and request the attorneys we have empowered in the Declaration and Power of Attorney in this application, to insert the filing date and application number of said application above in the lines provided when known.

First Assignor:

LOVE, David J.

3132 Covington St.  
West Lafayette, IN 47906,  
USA

Citizenship: United States of America

IN WITNESS WHEREOF, I hereto set my hand and seal this 15<sup>th</sup> day of

January, 2011

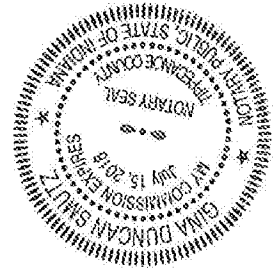
Signature: \_\_\_\_\_

LOVE, David J.

City of West Lafayette :

Indiana :

Country of United States :



Before me this 15<sup>th</sup> day of January, 2011, personally appeared known to me to be the person whose name is subscribed to the foregoing Assignment and acknowledged that they executed the same as his free act and deed for the purposes therein contained.

Gina Duncan Smith  
\_\_\_\_\_  
Witness or Notary Public

