

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT2732308

SUBMISSION TYPE:	CORRECTIVE ASSIGNMENT										
NATURE OF CONVEYANCE:	Corrective Assignment to correct the ASSIGNORS ASSIGNING THEIR RIGHTS TO SAMSUNG ELECTRONICS CO., LTD. previously recorded on Reel 026144 Frame 0820. Assignor(s) hereby confirms the BRUNO CLERCKX AND JUN IL CHOI ONLY ASSIGN THEIR RIGHTS TO SAMSUNG ELECTRONICS CO., LTD.										
CONVEYING PARTY DATA											
<table border="1"> <thead> <tr> <th>Name</th> <th>Execution Date</th> </tr> </thead> <tbody> <tr> <td>BRUNO CLERCKX</td> <td>01/10/2011</td> </tr> <tr> <td>JUN IL CHOI</td> <td>01/10/2011</td> </tr> </tbody> </table>		Name	Execution Date	BRUNO CLERCKX	01/10/2011	JUN IL CHOI	01/10/2011				
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BRUNO CLERCKX	01/10/2011										
JUN IL CHOI	01/10/2011										
RECEIVING PARTY DATA											
<table border="1"> <tr> <td>Name:</td> <td>SAMSUNG ELECTRONICS CO., LTD.</td> </tr> <tr> <td>Street Address:</td> <td>416, MAETAN-DONG, YEONGTONG-GU</td> </tr> <tr> <td>City:</td> <td>SUWON-SI, GYEONGGI-DO</td> </tr> <tr> <td>State/Country:</td> <td>KOREA, REPUBLIC OF</td> </tr> <tr> <td>Postal Code:</td> <td>443-742</td> </tr> </table>		Name:	SAMSUNG ELECTRONICS CO., LTD.	Street Address:	416, MAETAN-DONG, YEONGTONG-GU	City:	SUWON-SI, GYEONGGI-DO	State/Country:	KOREA, REPUBLIC OF	Postal Code:	443-742
Name:	SAMSUNG ELECTRONICS CO., LTD.										
Street Address:	416, MAETAN-DONG, YEONGTONG-GU										
City:	SUWON-SI, GYEONGGI-DO										
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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>12982329</td> </tr> </tbody> </table>		Property Type	Number	Application Number:	12982329						
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Application Number:	12982329										
CORRESPONDENCE DATA											
Fax Number:	(202)315-3758										
Phone:	2024290020										
Email:	pto@nsiplaw.com										
<i>Correspondence will be sent via US Mail when the email attempt is unsuccessful.</i>											
Correspondent Name:	NSIP LAW										
Address Line 1:	P.O. BOX 65745										
Address Line 4:	WASHINGTON, DISTRICT OF COLUMBIA 20035										
ATTORNEY DOCKET NUMBER:	011052.0030										
NAME OF SUBMITTER:	LOREN H. TUNG										

Signature:	/Loren H. Tung/
Date:	02/19/2014
<p>Total Attachments: 17</p> <p>source=CORRECTIVEASSIGN_0110520030_MarkedUp_NOR#page1.tif source=CORRECTIVEASSIGN_0110520030_MarkedUp_NOR#page2.tif source=738_CombinedAssignment#page1.tif source=738_CombinedAssignment#page2.tif source=738_CombinedAssignment#page3.tif source=738_CombinedAssignment#page4.tif source=738_CombinedAssignment#page5.tif source=738_CombinedAssignment#page6.tif source=738_CombinedAssignment#page7.tif source=738_CombinedAssignment#page8.tif source=738_CombinedAssignment#page9.tif source=738_CombinedAssignment#page10.tif source=738_CombinedAssignment#page11.tif source=738_CombinedAssignment#page12.tif source=738_CombinedAssignment#page13.tif source=738_CombinedAssignment#page14.tif source=738_CombinedAssignment#page15.tif</p>	

TO:NORTH STAR INTELLECTUAL PROPERTY LAW, PC COMPANY:P.O. BOX 34688

PATENT ASSIGNMENT

Electronic Version v1.1
 Stylesheet Version v1.1

04/18/2011
 501504462

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
Bruno Clerckx	01/10/2011
Jun Il Choi	01/10/2011
Taejoon Kim	04/12/2011
Obadamilola Aluko	04/11/2011
David J. Love	04/12/2011

RECEIVING PARTY DATA

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

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	12982329

CORRESPONDENCE DATA

Fax Number: (202)315-3758
Correspondence will be sent via US Mail when the fax attempt is unsuccessful.
 Phone: (202) 429-0020
 Email: email@nsiplaw.com
 Correspondent Name: North Star Intellectual Property Law, PC
 Address Line 1: P.O. Box 34688
 Address Line 4: Washington, DISTRICT OF COLUMBIA 20043

ATTORNEY DOCKET NUMBER:	12000.SMG.0738
NAME OF SUBMITTER:	Nicholas M. Stabler

Total Attachments: 15

OP \$40.00 12982329

TO:NORTH STAR INTELLECTUAL PROPERTY LAW, PC COMPANY:P.O. BOX 34688

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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:

METHOD AND APPARATUS FOR SHARING CHANNEL STATE INFORMATION (CSI) IN A MULTIPLE-USER MULTIPLE-INPUT MULTIPLE-OUTPUT (MU-MIMO) ENVIRONMENT

for which we executed an application for United States Letters Patent concurrently herewith or filed an application for United States Letters Patent on December 30, 2010 Application No. 12/982,329; and

WHEREAS,

(1) **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.

First Assignor:

Bruno CLERCKX

No. 920, Seocho EO vill, 1593-7 Seocho-dong,
Seocho-gu, Seoul 137-963, Republic of Korea

Citizenship: Belgium

IN WITNESS WHEREOF, I hereto set my hand and seal this 10th day of
January, 2011

Signature: 
Bruno CLERCKX

City of Seoul :

:

Country of Republic of Korea :

Before me this _____ day of _____, 2010, 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.

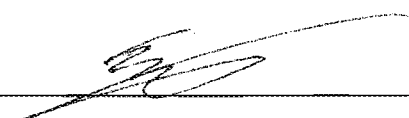
Witness or Notary Public

Second Assignor:

Jun Il CHOI
No. 104-1302, Bangbaehyundae-mempis Apt.,
Bangbaebon-dong, Seocho-gu, Seoul 137-069
Republic of Korea

Citizenship: Republic of Korea

IN WITNESS WHEREOF, I hereto set my hand and seal this 10th day of
January, 2011

Signature: 
Jun Il CHOI

City of Seoul :

:

Country of Republic of Korea :

Before me this _____ day of _____, 2010, personally appeared
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on December 30, 2010 Application No. 12/982,329; and

WHEREAS,

PURDUE RESEARCH FOUNDATION, a United States of America foundation having its principal executive office(s) or place of business at:

1281 Win Henschel 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.

Assignor:

Taejoon KIM

No. 302-406, Daeyoung-jangmi Apt.,
Geumchon 2-dong, Paju-si, Gyeonggi-do 413-709
Republic of Korea

Citizenship: Republic of Korea

IN WITNESS WHEREOF, I hereto set my hand and seal this 12th day of
April, 2011

Signature: [Handwritten Signature]
Taejoon KIM

City of New Lafayette :
County of Appomattox :
Country of United States :

Before me this 12th day of April, 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.

[Handwritten Signature]
Witness or Notary Public



Assignor:

Obadamilola ALUKO

906 N 7th Street, Apt. 17,
Lafayette, IN.47907
USA

Citizenship: Nigeria

IN WITNESS WHEREOF, I hereto set my hand and seal this _____ day of
_____, 2011

Signature: _____
Obadamilola ALUKO

City of _____ :

:

Country of _____ :

Before me this _____ day of _____, 2011, personally appeared
known to me to be the person whose name is subscribed to the foregoing Assignment and
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contained.

Witness or Notary Public

Assignor:

David J. LOVE

School of Electrical and Computer Engineering,
Purdue University
465 Northwestern Ave.,
West Lafayette, IN 47907
USA

Citizenship: U.S.A.

IN WITNESS WHEREOF, I hereto set my hand and seal this 12 day of

April, 2011

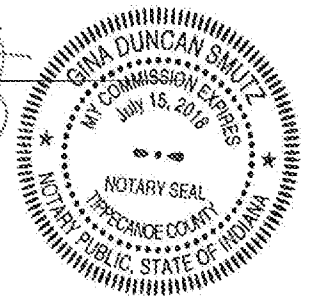
Signature: _____

David J. LOVE

City of West Lafayette :
County Tippecanoe
Country of United States

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acknowledged that they executed the same as his free act and deed for the purposes therein
contained.

Gina Duncan Smutz
Witness or Notary Public



JOINT INVENTION
(U.S. Rights Only)

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Assignor:

Taejoon KIM

No. 302-406, Daeyoung-jangmi Apt.,
Geumchon 2-dong, Paju-si, Gyonggi-do 413-709
Republic of Korea

Citizenship: Republic of Korea

IN WITNESS WHEREOF, I hereto set my hand and seal this _____ day of
_____, 2011

Signature: _____
Taejoon KIM

City of _____ :

:

Country of _____ :

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

Assignor:

Obadamilola ALUKO

906 N 7th Street, Apt. 17,
Lafayette, IN.47907
USA

Citizenship: Nigeria

IN WITNESS WHEREOF, I hereto set my hand and seal this 11th day of
APRIL, 2011

Signature: *Obadamilola Aluko*
Obadamilola ALUKO

City of California :

Country of Santa Clara :

Before me this 11th day of April, 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.

Elena Flores
Witness or Notary Public

Assignor:

David J. LOVE

School of Electrical and Computer Engineering,
Purdue University
465 Northwestern Ave.,
West Lafayette, IN 47907
USA

Citizenship: U.S.A.

IN WITNESS WHEREOF, I hereto set my hand and seal this _____ day of
_____, 2011

Signature: _____
David J. LOVE

City of _____ :

Country of _____ :

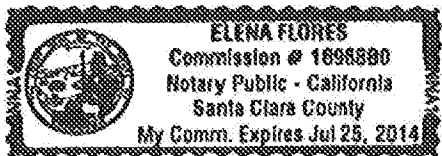
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contained.

Witness or Notary Public

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

State of California }
 County of santa clara }
 On April 11, 2011 before me, Elena FLORES
Date Here Inger Name and Title of the Officer
 personally appeared ALUKE, Abadami Lolo
Name(s) of Signer(s)

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies); and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.



I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature: Elena Flores
Signature of Notary Public

Please Notary Seal and/or Stamp Above

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

Description of Attached Document

Title or Type of Document: Patent Application / Humboldt Declaration of Power of Attorney
 Document Date: April 11, 2011 Number of Pages: 9

Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: _____ <input type="checkbox"/> Corporate Officer — Title(s): _____ <input type="checkbox"/> Individual <input type="checkbox"/> Partner — <input type="checkbox"/> Limited <input type="checkbox"/> General <input type="checkbox"/> Attorney in Fact <input type="checkbox"/> Trustee <input type="checkbox"/> Guardian or Conservator <input type="checkbox"/> Other: _____ Signer Is Representing: _____	RIGHT THUMBPRINT OF SIGNER Top of thumb here	Signer's Name: _____ <input type="checkbox"/> Corporate Officer — Title(s): _____ <input type="checkbox"/> Individual <input type="checkbox"/> Partner — <input type="checkbox"/> Limited <input type="checkbox"/> General <input type="checkbox"/> Attorney in Fact <input type="checkbox"/> Trustee <input type="checkbox"/> Guardian or Conservator <input type="checkbox"/> Other: _____ Signer Is Representing: _____	RIGHT THUMBPRINT OF SIGNER Top of thumb here
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