

PATENT ASSIGNMENT

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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>Bruno CLERCKX</td> <td>06/18/2013</td> </tr> <tr> <td>Sung Jin KIM</td> <td>06/18/2013</td> </tr> <tr> <td>Ki Il KIM</td> <td>06/18/2013</td> </tr> <tr> <td>David J. LOVE</td> <td>06/18/2013</td> </tr> <tr> <td>Taejoon KIM</td> <td>06/18/2013</td> </tr> </tbody> </table>		Name	Execution Date	Bruno CLERCKX	06/18/2013	Sung Jin KIM	06/18/2013	Ki Il KIM	06/18/2013	David J. LOVE	06/18/2013	Taejoon KIM	06/18/2013
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<table border="1"> <tr> <td>Name:</td> <td>SAMSUNG ELECTRONICS CO., LTD.</td> </tr> <tr> <td>Street Address:</td> <td>129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do 443-742</td> </tr> <tr> <td>City:</td> <td>Suwon-si</td> </tr> <tr> <td>State/Country:</td> <td>KOREA, REPUBLIC OF</td> </tr> </table>		Name:	SAMSUNG ELECTRONICS CO., LTD.	Street Address:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do 443-742	City:	Suwon-si	State/Country:	KOREA, REPUBLIC OF				
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CORRESPONDENCE DATA													
<p>Fax Number: 2023153758 <i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i></p> <p>Phone: 2024290020 Email: info@nsiplaw.com Correspondent Name: NSIP Law Address Line 1: P.O. Box 65745</p>													

OP \$40.00 12429937

Address Line 4: Washington, DISTRICT OF COLUMBIA 20035	
ATTORNEY DOCKET NUMBER:	011052.0016
NAME OF SUBMITTER:	Loren H. Tung
Signature:	/Loren H. Tung/
Date:	06/18/2013
Total Attachments: 4 source=NOA20130318_0110520016_20130618LFC_AssignmentEXE#page1.tif source=NOA20130318_0110520016_20130618LFC_AssignmentEXE#page2.tif source=NOA20130318_0110520016_20130618LFC_AssignmentEXE#page3.tif source=NOA20130318_0110520016_20130618LFC_AssignmentEXE#page4.tif	

ASSIGNMENT

For valuable consideration, we,

Bruno CLERCKX	San 14-1, Nongseo-dong, Giheung-gu, Yongin-si, Gyeonggi-do 446-712, Republic of Korea
Sung Jin KIM	No. 437-1901, Cheongmyeong Maeul Samsung Raemian Apt., Yeongtong-dong, Paldal-gu, Suwon- si, Gyeonggi-do 443-737, Republic of Korea
Ki Il KIM	No. 101-501, I-park Apt., Yatap-dong, Bundang-gu, Seongnam-si, Gyeonggi-do 463-070, Republic of Korea
David J. LOVE	School of Electrical and Computer Engineering, Purdue University, 465 Northwestern Ave., West Lafayette, IN 47907, USA
Taejoon KIM	EE Building, 465 Northwestern Ave., West Lafayette, Indiana 47907, USA

hereby assign to:

SAMSUNG ELECTRONICS CO., LTD., a Republic of Korea
corporation having principal executive offices or a place of
business at 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-
do 443-742, Republic of Korea, and

PURDUE RESEARCH FOUNDATION, a USA educational
institution having principal executive offices or a place of business
at 1281 Win Hentschel Blvd., West Lafayette, Indiana 47906-
4182, USA,

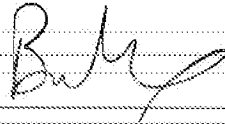
and their successors and assigns (collectively hereinafter called "the Assignees"), the entire right,
title and interest throughout the world in the inventions and improvements that are the subject of
U.S. Patent Application Number 12/429,937, filed April, 24, 2009, in the U.S. Patent &
Trademark Office, signed by us and entitled:

**MULTIPLE ANTENNA COMMUNICATION SYSTEM INCLUDING ADAPTIVE
UPDATING AND CHANGING OF CODEBOOKS**. We authorize and request the attorneys
appointed in said application to hereafter complete this Assignment by inserting above the
application number and filing date of said application when known, and to correct any
typographical errors that may be discovered in this Assignment; this Assignment including said
application, any and all United States and foreign patents, utility models, and design registrations
granted for any of said inventions or improvements, and the right to claim priority based on the

filing date of said application under the International Convention for the Protection of Industrial Property, the Patent Cooperation Treaty, the European Patent Convention, and all other treaties of like purposes; and we authorize the Assignees to apply in all countries in our name or in its own name for patents, utility models, design registrations and like rights of exclusion and for inventors' certificates for said inventions and improvements; and we agree for ourselves and our respective heirs, legal representatives and assigns, without further compensation to perform such lawful acts and to sign such further applications, Assignments, preliminary statements and other lawful documents as the Assignees may reasonably request to effectuate fully this Assignment.

IN TESTIMONY/WITNESS WHEREOF, we, the undersigned inventors (Assignors), intending to be legally bound, have hereto affixed our signatures.

This 18th day of June, 2013



Bruno CLERCKX

This _____ day of _____, 2013

Sung Jin KIM

This _____ day of _____, 2013

Ki Il KIM

This _____ day of _____, 2013

David J. LOVE

This _____ day of _____, 2013

Taejoon KIM

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hereby assign to:

SAMSUNG ELECTRONICS CO., LTD., a Republic of Korea corporation having principal executive offices or a place of business at 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do 443-742, Republic of Korea, and

PURDUE RESEARCH FOUNDATION, a USA educational institution having principal executive offices or a place of business at 1281 Win Hentschel Blvd., West Lafayette, Indiana 47906-4182, USA,

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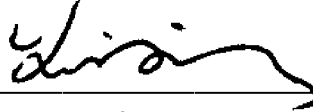
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filing date of said application under the International Convention for the Protection of Industrial Property, the Patent Cooperation Treaty, the European Patent Convention, and all other treaties of like purposes; and we authorize the Assignees to apply in all countries in our name or in its own name for patents, utility models, design registrations and like rights of exclusion and for inventors' certificates for said inventions and improvements; and we agree for ourselves and our respective heirs, legal representatives and assigns, without further compensation to perform such lawful acts and to sign such further applications, Assignments, preliminary statements and other lawful documents as the Assignees may reasonably request to effectuate fully this Assignment.

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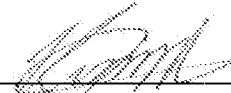
This _____ day of _____, 2013

Bruno CLERCKX



Sung Jin KIM

This 18th day of June, 2013



Ki Il KIM

This 18th day of June, 2013



David J. LOVE

This 18th day of June, 2013



Taejoon KIM

This 18th day of June, 2013