

<b>PATENT ASSIGNMENT COVER SHEET</b>
--------------------------------------

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT3341248

<b>SUBMISSION TYPE:</b>	CORRECTIVE ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	Corrective Assignment to correct the PROPERTY NUMBERS SECTION. CORRECTIVE ASSIGNMENT NOW CONTAINS OMITTED PCT/CN2013/073765, PCT/CN2012/073526 AND PCT/CN2012/080622 previously recorded on Reel 034364 Frame 0761. Assignor(s) hereby confirms the PCT/CN2013/073765, PCT/CN2012/073526, PCT/CN2012/080622 SHOULD HAVE BEEN ON ASSIGNMENT. ASSIGNORS ASSIGN RIGHTS TO ASSIGNEE..

**CONVEYING PARTY DATA**

Name	Execution Date
MASAKAZU SHIROTA	03/20/2015
XIPENG ZHU	04/28/2015
ARVIND SWAMINATHAN	03/18/2015
JUN WANG	03/18/2015
GEORGE CHERIAN	03/07/2015

**RECEIVING PARTY DATA**

<b>Name:</b>	QUALCOMM INCORPORATED
<b>Street Address:</b>	5775 MOREHOUSE DRIVE
<b>City:</b>	SAN DIEGO
<b>State/Country:</b>	CALIFORNIA
<b>Postal Code:</b>	92121-1714

**PROPERTY NUMBERS Total: 3**

Property Type	Number
Application Number:	14387836
PCT Number:	CN2012073526
PCT Number:	CN2012080622

**CORRESPONDENCE DATA**

**Fax Number:** (202)857-6395  
*Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.*

**Phone:** 202-857-6000  
**Email:** dcipdocket@arentfox.com  
**Correspondent Name:** ARENT FOX, LLP  
**Address Line 1:** 1717 K STREET, NW  
**Address Line 4:** WASHINGTON, D.C. 20006-5344

<b>NAME OF SUBMITTER:</b>	REBECCA GOLDEN
<b>SIGNATURE:</b>	/Rebecca Golden/
<b>DATE SIGNED:</b>	05/06/2015
<b>Total Attachments: 26</b> source=121978_SupportingDocumentsForCorrection#page1.tif source=121978_SupportingDocumentsForCorrection#page2.tif source=121978_SupportingDocumentsForCorrection#page3.tif source=121978_SupportingDocumentsForCorrection#page4.tif source=121978_SupportingDocumentsForCorrection#page5.tif source=121978_SupportingDocumentsForCorrection#page6.tif source=121978_SupportingDocumentsForCorrection#page7.tif source=121978_SupportingDocumentsForCorrection#page8.tif source=121978_SupportingDocumentsForCorrection#page9.tif source=121978_SupportingDocumentsForCorrection#page10.tif source=121978_SupportingDocumentsForCorrection#page11.tif source=121978_SupportingDocumentsForCorrection#page12.tif source=121978_SupportingDocumentsForCorrection#page13.tif source=121978_SupportingDocumentsForCorrection#page14.tif source=121978_SupportingDocumentsForCorrection#page15.tif source=121978_SupportingDocumentsForCorrection#page16.tif source=121978_SupportingDocumentsForCorrection#page17.tif source=121978_SupportingDocumentsForCorrection#page18.tif source=121978_SupportingDocumentsForCorrection#page19.tif source=121978_SupportingDocumentsForCorrection#page20.tif source=121978_SupportingDocumentsForCorrection#page21.tif source=121978_SupportingDocumentsForCorrection#page22.tif source=121978_SupportingDocumentsForCorrection#page23.tif source=121978_SupportingDocumentsForCorrection#page24.tif source=121978_SupportingDocumentsForCorrection#page25.tif source=121978_SupportingDocumentsForCorrection#page26.tif	

ASSIGNMENT

WHEREAS, WE,

1. Masakazu SHIROTA, a citizen of Japan, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of Yokohama-shi, Japan;
2. Xipeng ZHU, a citizen of China, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of Beijing, China;
3. Arvind SWAMINATHAN, a citizen of India, having a mailing address located at 3184 Vinifera Dr., San Jose, CA 95135, and a resident San Jose, California;
4. Jun WANG, a citizen of United States of America, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of Poway, California; and
5. George CHERIAN, a citizen of United States of America, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of San Diego, California,

have conceived of one or more processes, methods, machines, articles of manufacture, designs, compositions of matter, inventions, discoveries or new or useful improvements relating to **METHOD AND APPARATUS FOR LTE RADIO ACCESS NETWORK SHARING** (collectively the "INVENTIONS") for which WE have executed and/or may execute one or more patent applications therefor; and

WHEREAS, QUALCOMM Incorporated (hereinafter "ASSIGNEE"), a Delaware corporation, having a place of business at 5775 Morehouse Drive, San Diego, California 92121-1714, U.S.A., desires to acquire or otherwise obtain the entire right, title, and interest in and to said INVENTIONS, including all inventions related thereto or thereof, all patent applications therefor, and all patents that have granted or may be granted hereafter thereon, including but not limited to those identified below.

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, WE do hereby acknowledge that WE have sold, assigned, conveyed, and transferred, and by these presents do hereby sell, assign, convey, and transfer, unto ASSIGNEE, its successors, its legal representatives, and its assigns, the entire right, title, and interest throughout the world in and to said INVENTIONS, including all patent applications therefor that may have been filed or may be filed hereafter for said INVENTIONS under the Patent Cooperation Treaty (PCT), and/or in the United States, including but not limited to U.S. Application No(s). 14/387,836 filed April 4, 2013, Qualcomm Reference No. 121978, International Patent Application No(s). PCT/CN2013/073765, filed April 4, 2013, Qualcomm Reference No. 121978WO2, and all provisional applications relating thereto, together with International Application No(s).

PCT/CN2012/073526, filed April 5, 2012, Qualcomm Reference No. 121978WO1, and PCT/CN2012/080622, filed August 27, 2012, Qualcomm Reference No. 123910WO1 (and do hereby authorize ASSIGNEE and its representative to hereafter add herein such application number(s) and/or filing date(s) when known), and all non-provisional applications, national phase applications, divisional applications, renewal applications, continuation applications, continuation-in-part applications, and design applications thereof, and all issued patents of the United States which may have granted or may be granted hereafter thereon and all reissues, renewals, reexaminations, and extensions to any of the foregoing and all patents issuing thereon in the United States;

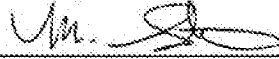
AND WE further do acknowledge and agree that WE have sold, assigned, conveyed, and transferred, and by these presents do hereby sell, assign, convey, and transfer, unto ASSIGNEE, its successors, its legal representatives, and its assigns, all rights of priority under International Conventions, Treaties, or Agreements, and the entire right, title, and interest throughout the world in said INVENTIONS, including all inventions related thereto or thereof, and all patent applications therefor that may have been filed or may be filed hereafter for said INVENTIONS in any foreign country, countries, or treaty/union organizations, and all divisional applications, renewal applications, continuation applications, continuation-in-part applications, patent of addition applications, confirmation applications, validation applications, utility model applications, and design applications thereof, and all issued patents which may have granted or may be granted hereafter for said INVENTIONS in any country or countries foreign to the United States, and all reissues, renewals, reexaminations, and extensions thereof;

AND WE DO HEREBY authorize and request the Commissioner of Patents of the United States, and any Official of any country or countries foreign to the United States, whose duty it is to issue patents on applications or registrations, to issue all patents for said INVENTIONS to said ASSIGNEE, its successors, its legal representatives and its assigns, in accordance with the terms of this instrument;

AND WE DO HEREBY sell, assign, transfer, and convey to said ASSIGNEE, its successors, its legal representatives, and its assigns all claims for damages and all remedies arising out of or relating to any violation(s) of any of the rights assigned hereby that have or may have accrued prior to the date of assignment to said ASSIGNEE, or may accrue hereafter, including, but not limited to the right to sue for, seek, obtain, collect, recover, and retain damages and any ongoing or prospective royalties to which WE may be entitled, or that WE may collect for any infringement or from any settlement or agreement related to any of said patents before or after issuance;

AND WE HEREBY covenant and agree that WE will communicate promptly to said ASSIGNEE, its successors, its legal representatives, and its assigns, any facts known to us respecting said INVENTIONS, and will testify in any legal proceeding, sign all lawful papers, execute all applications and certificates, make all rightful declarations and/or oaths, and provide all lawful assistance to said ASSIGNEE, its successors, its legal representatives and its assigns, to obtain and enforce patent protection for said INVENTIONS in all countries;

AND WE HEREBY covenant that WE will not execute any writing nor do any act whatsoever conflicting with these presents.

Done at Tokyo, on Mar 20, 2015   
LOCATION DATE Masakazu SHIROTA

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Xipeng ZHU

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Arvind SWAMINATHAN

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Jun WANG

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE George CHERIAN

## ASSIGNMENT

### WHEREAS, WE,

1. **Masakazu SHIROTA**, a citizen of **Japan**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of **Yokohama-shi, Japan**;
2. **Xipeng ZHU**, a citizen of **China**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of **Beijing, China**;
3. **Arvind SWAMINATHAN**, a citizen of **India**, having a mailing address located at 3184 Vinifera Dr., San Jose, CA 95135, and a resident **San Jose, California**;
4. **Jun WANG**, a citizen of **United States of America**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of **Poway, California**; and
5. **George CHERIAN**, a citizen of **United States of America**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of **San Diego, California**,

have conceived of one or more processes, methods, machines, articles of manufacture, designs, compositions of matter, inventions, discoveries or new or useful improvements relating to **METHOD AND APPARATUS FOR LTE RADIO ACCESS NETWORK SHARING** (collectively the "INVENTIONS") for which WE have executed and/or may execute one or more patent applications therefor; and

WHEREAS, QUALCOMM Incorporated (hereinafter "**ASSIGNEE**"), a Delaware corporation, having a place of business at 5775 Morehouse Drive, San Diego, California 92121-1714, U.S.A., desires to acquire or otherwise obtain the entire right, title, and interest in and to said INVENTIONS, including all inventions related thereto or thereof, all patent applications therefor, and all patents that have granted or may be granted hereafter thereon, including but not limited to those identified below.

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, WE do hereby acknowledge that WE have sold, assigned, conveyed, and transferred, and by these presents do hereby sell, assign, convey, and transfer, unto ASSIGNEE, its successors, its legal representatives, and its assigns, the entire right, title, and interest throughout the world in and to said INVENTIONS, including all patent applications therefor that may have been filed or may be filed hereafter for said INVENTIONS under the Patent Cooperation Treaty (PCT), and/or in the United States, including but not limited to U.S. Application No(s). 14/387,836 filed **April 4, 2013**, Qualcomm Reference No. 121978, International Patent Application No(s). PCT/CN2013/073765, filed **April 4, 2013**, Qualcomm Reference No. 121978WO2, and all provisional applications relating thereto, together with International Application No(s).

PCT/CN2012/073526, filed April 5, 2012, Qualcomm Reference No. 121978WO1, and PCT/CN2012/080622, filed August 27, 2012, Qualcomm Reference No. 123910WO1 (and do hereby authorize ASSIGNEE and its representative to hereafter add herein such application number(s) and/or filing date(s) when known), and all non-provisional applications, national phase applications, divisional applications, renewal applications, continuation applications, continuation-in-part applications, and design applications thereof, and all issued patents of the United States which may have granted or may be granted hereafter thereon and all reissues, renewals, reexaminations, and extensions to any of the foregoing and all patents issuing thereon in the United States;

AND WE further do acknowledge and agree that WE have sold, assigned, conveyed, and transferred, and by these presents do hereby sell, assign, convey, and transfer, unto ASSIGNEE, its successors, its legal representatives, and its assigns, all rights of priority under International Conventions, Treaties, or Agreements, and the entire right, title, and interest throughout the world in said INVENTIONS, including all inventions related thereto or thereof, and all patent applications therefor that may have been filed or may be filed hereafter for said INVENTIONS in any foreign country, countries, or treaty/union organizations, and all divisional applications, renewal applications, continuation applications, continuation-in-part applications, patent of addition applications, confirmation applications, validation applications, utility model applications, and design applications thereof, and all issued patents which may have granted or may be granted hereafter for said INVENTIONS in any country or countries foreign to the United States, and all reissues, renewals, reexaminations, and extensions thereof;

AND WE DO HEREBY authorize and request the Commissioner of Patents of the United States, and any Official of any country or countries foreign to the United States, whose duty it is to issue patents on applications or registrations, to issue all patents for said INVENTIONS to said ASSIGNEE, its successors, its legal representatives and its assigns, in accordance with the terms of this instrument;

AND WE DO HEREBY sell, assign, transfer, and convey to said ASSIGNEE, its successors, its legal representatives, and its assigns all claims for damages and all remedies arising out of or relating to any violation(s) of any of the rights assigned hereby that have or may have accrued prior to the date of assignment to said ASSIGNEE, or may accrue hereafter, including, but not limited to the right to sue for, seek, obtain, collect, recover, and retain damages and any ongoing or prospective royalties to which WE may be entitled, or that WE may collect for any infringement or from any settlement or agreement related to any of said patents before or after issuance;

AND WE HEREBY covenant and agree that WE will communicate promptly to said ASSIGNEE, its successors, its legal representatives, and its assigns, any facts known to us respecting said INVENTIONS, and will testify in any legal proceeding, sign all lawful papers, execute all applications and certificates, make all rightful declarations and/or oaths, and provide all lawful assistance to said ASSIGNEE, its successors, its legal representatives and its assigns, to obtain and enforce patent protection for said INVENTIONS in all countries;

AND WE HEREBY covenant that WE will not execute any writing nor do any act whatsoever conflicting with these presents.

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Masakazu SHIROTA

Done at Beijing, on April 28, 2015 XIPENG ZHU (Xipeng zhu)  
LOCATION DATE Xipeng ZHU

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Arvind SWAMINATHAN

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Jun WANG

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE George CHERIAN



ASSIGNMENT

WHEREAS, WE,

1. Masakazu SHIROTA, a citizen of Japan, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of Yokohama-shi, Japan;
2. Xipeng ZHU, a citizen of China, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of Beijing, China;
3. Arvind SWAMINATHAN, a citizen of India, having a mailing address located at 3184 Vinifera Dr., San Jose, CA 95135, and a resident San Jose, California;
4. Jun WANG, a citizen of United States of America, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of Poway, California; and
5. George CHERIAN, a citizen of United States of America, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of San Diego, California,

have conceived of one or more processes, methods, machines, articles of manufacture, designs, compositions of matter, inventions, discoveries or new or useful improvements relating to **METHOD AND APPARATUS FOR LTE RADIO ACCESS NETWORK SHARING** (collectively the "INVENTIONS") for which WE have executed and/or may execute one or more patent applications therefor; and

WHEREAS, QUALCOMM Incorporated (hereinafter "ASSIGNEE"), a Delaware corporation, having a place of business at 5775 Morehouse Drive, San Diego, California 92121-1714, U.S.A., desires to acquire or otherwise obtain the entire right, title, and interest in and to said INVENTIONS, including all inventions related thereto or thereof, all patent applications therefor, and all patents that have granted or may be granted hereafter thereon, including but not limited to those identified below.

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, WE do hereby acknowledge that WE have sold, assigned, conveyed, and transferred, and by these presents do hereby sell, assign, convey, and transfer, unto ASSIGNEE, its successors, its legal representatives, and its assigns, the entire right, title, and interest throughout the world in and to said INVENTIONS, including all patent applications therefor that may have been filed or may be filed hereafter for said INVENTIONS under the Patent Cooperation Treaty (PCT), and/or in the United States, including but not limited to U.S. Application No(s). 14/387,836 filed April 4, 2013, Qualcomm Reference No. 121978, International Patent Application No(s). PCT/CN2013/073765 filed April 4, 2013, Qualcomm Reference No. 121978WO2, and all provisional applications relating thereto, together with International Application No(s).

PCT/CN2012/073526, filed April 5, 2012, Qualcomm Reference No. 121978WO1, and PCT/CN2012/080622, filed August 27, 2012, Qualcomm Reference No. 123910WO1 (and do hereby authorize ASSIGNEE and its representative to hereafter add herein such application number(s) and/or filing date(s) when known), and all non-provisional applications, national phase applications, divisional applications, renewal applications, continuation applications, continuation-in-part applications, and design applications thereof, and all issued patents of the United States which may have granted or may be granted hereafter thereon and all reissues, renewals, reexaminations, and extensions to any of the foregoing and all patents issuing thereon in the United States;

AND WE further do acknowledge and agree that WE have sold, assigned, conveyed, and transferred, and by these presents do hereby sell, assign, convey, and transfer, unto ASSIGNEE, its successors, its legal representatives, and its assigns, all rights of priority under International Conventions, Treaties, or Agreements, and the entire right, title, and interest throughout the world in said INVENTIONS, including all inventions related thereto or thereof, and all patent applications therefor that may have been filed or may be filed hereafter for said INVENTIONS in any foreign country, countries, or treaty/union organizations, and all divisional applications, renewal applications, continuation applications, continuation-in-part applications, patent of addition applications, confirmation applications, validation applications, utility model applications, and design applications thereof, and all issued patents which may have granted or may be granted hereafter for said INVENTIONS in any country or countries foreign to the United States, and all reissues, renewals, reexaminations, and extensions thereof;

AND WE DO HEREBY authorize and request the Commissioner of Patents of the United States, and any Official of any country or countries foreign to the United States, whose duty it is to issue patents on applications or registrations, to issue all patents for said INVENTIONS to said ASSIGNEE, its successors, its legal representatives and its assigns, in accordance with the terms of this instrument;


AND WE DO HEREBY sell, assign, transfer, and convey to said ASSIGNEE, its successors, its legal representatives, and its assigns all claims for damages and all remedies arising out of or relating to any violation(s) of any of the rights assigned hereby that have or may have accrued prior to the date of assignment to said ASSIGNEE, or may accrue hereafter, including, but not limited to the right to sue for, seek, obtain, collect, recover, and retain damages and any ongoing or prospective royalties to which WE may be entitled, or that WE may collect for any infringement or from any settlement or agreement related to any of said patents before or after issuance;

AND WE HEREBY covenant and agree that WE will communicate promptly to said ASSIGNEE, its successors, its legal representatives, and its assigns, any facts known to us respecting said INVENTIONS, and will testify in any legal proceeding, sign all lawful papers, execute all applications and certificates, make all rightful declarations and/or oaths, and provide all lawful assistance to said ASSIGNEE, its successors, its legal representatives and its assigns, to obtain and enforce patent protection for said INVENTIONS in all countries;

AND WE HEREBY covenant that WE will not execute any writing nor do any act whatsoever conflicting with these presents.

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Masakazu SHIROTA

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Xipeng ZHU

Done at SAN JOSE, on 3/19/2015  
LOCATION DATE   
Arvind SWAMINATHAN

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Jun WANG

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE George CHERIAN

## ASSIGNMENT

### WHEREAS, WE,

1. **Masakazu SHIROTA**, a citizen of **Japan**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of **Yokohama-shi, Japan**;
2. **Xipeng ZHU**, a citizen of **China**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of **Beijing, China**;
3. **Arvind SWAMINATHAN**, a citizen of **India**, having a mailing address located at 3184 Vinifera Dr., San Jose, CA 95135, and a resident **San Jose, California**;
4. **Jun WANG**, a citizen of **United States of America**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of **Poway, California**; and
5. **George CHERIAN**, a citizen of **United States of America**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of **San Diego, California**,

have conceived of one or more processes, methods, machines, articles of manufacture, designs, compositions of matter, inventions, discoveries or new or useful improvements relating to **METHOD AND APPARATUS FOR LTE RADIO ACCESS NETWORK SHARING** (collectively the "INVENTIONS") for which WE have executed and/or may execute one or more patent applications therefor; and

WHEREAS, QUALCOMM Incorporated (hereinafter "ASSIGNEE"), a Delaware corporation, having a place of business at 5775 Morehouse Drive, San Diego, California 92121-1714, U.S.A., desires to acquire or otherwise obtain the entire right, title, and interest in and to said INVENTIONS, including all inventions related thereto or thereof, all patent applications therefor, and all patents that have granted or may be granted hereafter thereon, including but not limited to those identified below.

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, WE do hereby acknowledge that WE have sold, assigned, conveyed, and transferred, and by these presents do hereby sell, assign, convey, and transfer, unto ASSIGNEE, its successors, its legal representatives, and its assigns, the entire right, title, and interest throughout the world in and to said INVENTIONS, including all patent applications therefor that may have been filed or may be filed hereafter for said INVENTIONS under the Patent Cooperation Treaty (PCT), and/or in the United States, including but not limited to U.S. Application No(s). 14/387,836 filed **April 4, 2013**, Qualcomm Reference No. 121978, International Patent Application No(s). PCT/CN2013/073765, filed **April 4, 2013**, Qualcomm Reference No. 121978WO2, and all provisional applications relating thereto, together with International Application No(s).

PCT/CN2012/073526, filed April 5, 2012, Qualcomm Reference No. 121978WO1, and PCT/CN2012/080622, filed August 27, 2012, Qualcomm Reference No. 123910WO1 (and do hereby authorize ASSIGNEE and its representative to hereafter add herein such application number(s) and/or filing date(s) when known), and all non-provisional applications, national phase applications, divisional applications, renewal applications, continuation applications, continuation-in-part applications, and design applications thereof, and all issued patents of the United States which may have granted or may be granted hereafter thereon and all reissues, renewals, reexaminations, and extensions to any of the foregoing and all patents issuing thereon in the United States;

AND WE further do acknowledge and agree that WE have sold, assigned, conveyed, and transferred, and by these presents do hereby sell, assign, convey, and transfer, unto ASSIGNEE, its successors, its legal representatives, and its assigns, all rights of priority under International Conventions, Treaties, or Agreements, and the entire right, title, and interest throughout the world in said INVENTIONS, including all inventions related thereto or thereof, and all patent applications therefor that may have been filed or may be filed hereafter for said INVENTIONS in any foreign country, countries, or treaty/union organizations, and all divisional applications, renewal applications, continuation applications, continuation-in-part applications, patent of addition applications, confirmation applications, validation applications, utility model applications, and design applications thereof, and all issued patents which may have granted or may be granted hereafter for said INVENTIONS in any country or countries foreign to the United States, and all reissues, renewals, reexaminations, and extensions thereof;

AND WE DO HEREBY authorize and request the Commissioner of Patents of the United States, and any Official of any country or countries foreign to the United States, whose duty it is to issue patents on applications or registrations, to issue all patents for said INVENTIONS to said ASSIGNEE, its successors, its legal representatives and its assigns, in accordance with the terms of this instrument;

AND WE DO HEREBY sell, assign, transfer, and convey to said ASSIGNEE, its successors, its legal representatives, and its assigns all claims for damages and all remedies arising out of or relating to any violation(s) of any of the rights assigned hereby that have or may have accrued prior to the date of assignment to said ASSIGNEE, or may accrue hereafter, including, but not limited to the right to sue for, seek, obtain, collect, recover, and retain damages and any ongoing or prospective royalties to which WE may be entitled, or that WE may collect for any infringement or from any settlement or agreement related to any of said patents before or after issuance;

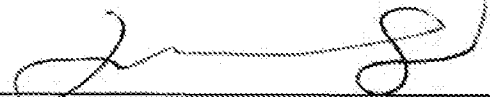
AND WE HEREBY covenant and agree that WE will communicate promptly to said ASSIGNEE, its successors, its legal representatives, and its assigns, any facts known to us respecting said INVENTIONS, and will testify in any legal proceeding, sign all lawful papers, execute all applications and certificates, make all rightful declarations and/or oaths, and provide all lawful assistance to said ASSIGNEE, its successors, its legal representatives and its assigns, to obtain and enforce patent protection for said INVENTIONS in all countries;

AND WE HEREBY covenant that WE will not execute any writing nor do any act whatsoever conflicting with these presents.

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Masakazu SHIROTA

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Xipeng ZHU

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Arvind SWAMINATHAN

Done at San Diego, on 3/18/2015   
LOCATION DATE Jun WANG

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE George CHERIAN

## ASSIGNMENT

## WHEREAS, WE,

1. **Masakazu SHIROTA**, a citizen of **Japan**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of **Yokohama-shi, Japan**;
2. **Xipeng ZHU**, a citizen of **China**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of **Beijing, China**;
3. **Arvind SWAMINATHAN**, a citizen of **India**, having a mailing address located at 3184 Vinifera Dr., San Jose, CA 95135, and a resident **San Jose, California**;
4. **Jun WANG**, a citizen of **United States of America**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of **Poway, California**; and
5. **George CHERIAN**, a citizen of **United States of America**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of **San Diego, California**,

have conceived of one or more processes, methods, machines, articles of manufacture, designs, compositions of matter, inventions, discoveries or new or useful improvements relating to **METHOD AND APPARATUS FOR LTE RADIO ACCESS NETWORK SHARING** (collectively the "INVENTIONS") for which WE have executed and/or may execute one or more patent applications therefor; and

WHEREAS, QUALCOMM Incorporated (hereinafter "ASSIGNEE"), a Delaware corporation, having a place of business at 5775 Morehouse Drive, San Diego, California 92121-1714, U.S.A., desires to acquire or otherwise obtain the entire right, title, and interest in and to said INVENTIONS, including all inventions related thereto or thereof, all patent applications therefor, and all patents that have granted or may be granted hereafter thereon, including but not limited to those identified below.

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, WE do hereby acknowledge that WE have sold, assigned, conveyed, and transferred, and by these presents do hereby sell, assign, convey, and transfer, unto ASSIGNEE, its successors, its legal representatives, and its assigns, the entire right, title, and interest throughout the world in and to said INVENTIONS, including all patent applications therefor that may have been filed or may be filed hereafter for said INVENTIONS under the Patent Cooperation Treaty (PCT), and/or in the United States, including but not limited to U.S. Application No(s). 14/387,836 filed April 4, 2013, Qualcomm Reference No. 121978, International Patent Application No(s). PCT/CN2013/073765, filed April 4, 2013, Qualcomm Reference No. 121978WO2, and all provisional applications relating thereto, together with International Application No(s).

PCT/CN2012/073526, filed April 5, 2012, Qualcomm Reference No. 121978WO1, and PCT/CN2012/080622, filed August 27, 2012, Qualcomm Reference No. 123910WO1 (and do hereby authorize ASSIGNEE and its representative to hereafter add herein such application number(s) and/or filing date(s) when known), and all non-provisional applications, national phase applications, divisional applications, renewal applications, continuation applications, continuation-in-part applications, and design applications thereof, and all issued patents of the United States which may have granted or may be granted hereafter thereon and all reissues, renewals, reexaminations, and extensions to any of the foregoing and all patents issuing thereon in the United States;

AND WE further do acknowledge and agree that WE have sold, assigned, conveyed, and transferred, and by these presents do hereby sell, assign, convey, and transfer, unto ASSIGNEE, its successors, its legal representatives, and its assigns, all rights of priority under International Conventions, Treaties, or Agreements, and the entire right, title, and interest throughout the world in said INVENTIONS, including all inventions related thereto or thereof, and all patent applications therefor that may have been filed or may be filed hereafter for said INVENTIONS in any foreign country, countries, or treaty/union organizations, and all divisional applications, renewal applications, continuation applications, continuation-in-part applications, patent of addition applications, confirmation applications, validation applications, utility model applications, and design applications thereof, and all issued patents which may have granted or may be granted hereafter for said INVENTIONS in any country or countries foreign to the United States, and all reissues, renewals, reexaminations, and extensions thereof;

AND WE DO HEREBY authorize and request the Commissioner of Patents of the United States, and any Official of any country or countries foreign to the United States, whose duty it is to issue patents on applications or registrations, to issue all patents for said INVENTIONS to said ASSIGNEE, its successors, its legal representatives and its assigns, in accordance with the terms of this instrument;

AND WE DO HEREBY sell, assign, transfer, and convey to said ASSIGNEE, its successors, its legal representatives, and its assigns all claims for damages and all remedies arising out of or relating to any violation(s) of any of the rights assigned hereby that have or may have accrued prior to the date of assignment to said ASSIGNEE, or may accrue hereafter, including, but not limited to the right to sue for, seek, obtain, collect, recover, and retain damages and any ongoing or prospective royalties to which WE may be entitled, or that WE may collect for any infringement or from any settlement or agreement related to any of said patents before or after issuance;

AND WE HEREBY covenant and agree that WE will communicate promptly to said ASSIGNEE, its successors, its legal representatives, and its assigns, any facts known to us respecting said INVENTIONS, and will testify in any legal proceeding, sign all lawful papers, execute all applications and certificates, make all rightful declarations and/or oaths, and provide all lawful assistance to said ASSIGNEE, its successors, its legal representatives and its assigns, to obtain and enforce patent protection for said INVENTIONS in all countries;



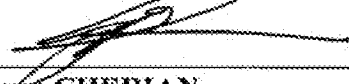
AND WE HEREBY covenant that WE will not execute any writing nor do any act whatsoever conflicting with these presents.

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Masakazu SHIROTA

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Xipeng ZHU

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Arvind SWAMINATHAN

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Jun WANG

Done at San Diego, on 4/7/15<sup>th</sup>  
LOCATION DATE   
George CHERIAN



United States Patent and Trademark Office

Home | Site Index | Search | Guides | Contacts | eBusiness | eSiz alerts | News | Help

*Electronic Patent Assignment System***Confirmation Receipt**

Your assignment has been received by the USPTO.  
The coversheet of the assignment is displayed below:

**PATENT ASSIGNMENT COVER SHEET**

Electronic Version v1.1  
Stylesheet Version v1.2

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
MASAKAZU SHIROTA	11/06/2014
XIPENG ZHU	11/04/2014
ARVIND SWAMINATHAN	11/18/2014
JUN WANG	11/07/2014
GEORGE CHERIAN	11/17/2014
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	QUALCOMM INCORPORATED
<b>Street Address:</b>	5775 MOREHOUSE DRIVE
<b>City:</b>	SAN DIEGO
<b>State/Country:</b>	CALIFORNIA
<b>Postal Code:</b>	92121-1714
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	14387836

**PATENT****REEL: 035602 FRAME: 0970**

**CORRESPONDENCE DATA**

Fax Number:

Phone: 213-629-7400

Email: dcipdocket@arentfox.com

*Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.*

Correspondent Name: ARENT FOX LLP AND QUALCOMM INCORPORATED

Address Line 1: 1717 K STREET, NW

Address Line 4: WASHINGTON, D.C. 20006-5344

**ATTORNEY DOCKET  
NUMBER:**

030284.08908 / 121978

**NAME OF SUBMITTER:**

PEGGY O'CONNOR

**Signature:**

/Peggy O'Connor/

**Date:**

12/03/2014

**Total Attachments: 7**

source=121978-Joint-Assignment#page1.tif

source=121978-Joint-Assignment#page2.tif

source=121978-Joint-Assignment#page3.tif

source=121978-Joint-Assignment#page4.tif

source=121978-Joint-Assignment#page5.tif

source=121978-Joint-Assignment#page6.tif

source=121978-Joint-Assignment#page7.tif

**RECEIPT INFORMATION**

EPAS ID: PAT3131684

Receipt Date: 12/03/2014

[Return to home page](#)| [HOME](#) | [INDEX](#) | [SEARCH](#) | [eBUSINESS](#) | [CONTACT US](#) | [PRIVACY STATEMENT](#)**PATENT**



**RECEIVED**

By Arent Fox at 4:13 pm, Dec 05, 2014

**UNITED STATES PATENT AND TRADEMARK OFFICE**

UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND  
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

DECEMBER 4, 2014

PTAS

AREN'T FOX LLP AND QUALCOMM  
INCORPORATED  
1717 K STREET, NW  
WASHINGTON, DC 20006-5344

**503085079**

UNITED STATES PATENT AND TRADEMARK OFFICE  
NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT

THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT RECORDATION BRANCH OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE ASSIGNMENT RECORDATION BRANCH AT 571-272-3350. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, MAIL STOP: ASSIGNMENT RECORDATION BRANCH, P.O. BOX 1450, ALEXANDRIA, VA 22313.

RECORDATION DATE: 12/03/2014

REEL/FRAME: 034364/0761  
NUMBER OF PAGES: 9

BRIEF: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).

DOCKET NUMBER: 030284.08908 / 121978

ASSIGNOR:

SHIROTA, MASAKAZU

DOC DATE: 11/06/2014

ASSIGNOR:

ZHU, XIPENG

DOC DATE: 11/04/2014

ASSIGNOR:

SWAMINATHAN, ARVIND

DOC DATE: 11/18/2014

ASSIGNOR:

WANG, JUN

DOC DATE: 11/07/2014

ASSIGNOR:

CHERIAN, GEORGE

DOC DATE: 11/17/2014

ASSIGNEE:

QUALCOMM INCORPORATED  
5775 MOREHOUSE DRIVE  
SAN DIEGO, CALIFORNIA 92121-1714

APPLICATION NUMBER: 14387836                      FILING DATE: 09/24/2014  
PATENT NUMBER:    ISSUE DATE:  
TITLE: METHOD AND APPARATUS FOR LTE RADIO ACCESS NETWORK SHARING

ASSIGNMENT RECORDATION BRANCH  
PUBLIC RECORDS DIVISION

ASSIGNMENT

WHEREAS, WE,

1. **Masakazu SHIROTA**, a citizen of **Japan**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of **Yokohama-shi, Japan**;
2. **Xipeng ZHU**, a citizen of **China**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of **Beijing, China**;
3. **Arvind SWAMINATHAN**, a citizen of **India**, having a mailing address located at 3184 Vinifera Dr., San Jose, CA 95135, and a resident **San Jose, California**;
4. **Jun WANG**, a citizen of **United States of America**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of **Poway, California**; and
5. **George CHERIAN**, a citizen of **United States of America**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714, and a resident of **San Diego, California**,

have conceived of one or more processes, methods, machines, articles of manufacture, designs, compositions of matter, inventions, discoveries or new or useful improvements relating to **METHOD AND APPARATUS FOR LTE RADIO ACCESS NETWORK SHARING** (collectively the "INVENTIONS") for which WE have executed and/or may execute one or more patent applications therefor; and

WHEREAS, QUALCOMM Incorporated (hereinafter "ASSIGNEE"), a Delaware corporation, having a place of business at 5775 Morehouse Drive, San Diego, California 92121-1714, U.S.A., desires to acquire or otherwise obtain the entire right, title, and interest in and to said INVENTIONS, including all inventions related thereto or thereof, all patent applications therefor, and all patents that have granted or may be granted hereafter thereon, including but not limited to those identified below.

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, WE do hereby acknowledge that WE have sold, assigned, conveyed, and transferred, and by these presents do hereby sell, assign, convey, and transfer, unto ASSIGNEE, its successors, its legal representatives, and its assigns, the entire right, title, and interest throughout the world in and to said INVENTIONS, including all patent applications therefor that may have been filed or may be filed hereafter for said INVENTIONS in the United States, including but not limited to U.S. Application No(s). 14/387,836 filed **April 4, 2013**, Qualcomm Reference No. 121978, and all provisional applications relating thereto, (and do hereby authorize ASSIGNEE and its representative to hereafter add herein such application number(s) and/or filing date(s) when known), and all divisional applications, renewal applications, continuation applications, continuation-in-

part applications, and design applications thereof, and all issued patents of the United States which may have granted or may be granted hereafter thereon and all reissues, renewals, reexaminations, and extensions to any of the foregoing and all patents issuing thereon in the United States:

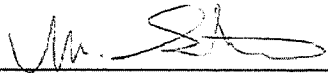
AND WE further do acknowledge and agree that WE have sold, assigned, conveyed, and transferred, and by these presents do hereby sell, assign, convey, and transfer, unto ASSIGNEE, its successors, its legal representatives, and its assigns, all rights of priority under International Conventions, Treaties, or Agreements, and the entire right, title, and interest throughout the world in said INVENTIONS, including all inventions related thereto or thereof, and all patent applications therefor that may have been filed or may be filed hereafter for said INVENTIONS in any foreign country, countries, or treaty/union organizations, and all divisional applications, renewal applications, continuation applications, continuation-in-part applications, patent of addition applications, confirmation applications, validation applications, utility model applications, and design applications thereof, and all issued patents which may have granted or may be granted hereafter for said INVENTIONS in any country or countries foreign to the United States, and all reissues, renewals, reexaminations, and extensions thereof.

AND WE DO HEREBY authorize and request the Commissioner of Patents of the United States, and any Official of any country or countries foreign to the United States, whose duty it is to issue patents on applications or registrations, to issue all patents for said INVENTIONS to said ASSIGNEE, its successors, its legal representatives and its assigns, in accordance with the terms of this instrument:

AND WE DO HEREBY sell, assign, transfer, and convey to said ASSIGNEE, its successors, its legal representatives, and its assigns all claims for damages and all remedies arising out of or relating to any violation(s) of any of the rights assigned hereby that have or may have accrued prior to the date of assignment to said ASSIGNEE, or may accrue hereafter, including, but not limited to the right to sue for, seek, obtain, collect, recover, and retain damages and any ongoing or prospective royalties to which WE may be entitled, or that WE may collect for any infringement or from any settlement or agreement related to any of said patents before or after issuance:

AND WE HEREBY covenant and agree that WE will communicate promptly to said ASSIGNEE, its successors, its legal representatives, and its assigns, any facts known to us respecting said INVENTIONS, and will testify in any legal proceeding, sign all lawful papers, execute all applications and certificates, make all rightful declarations and/or oaths, and provide all lawful assistance to said ASSIGNEE, its successors, its legal representatives and its assigns, to obtain and enforce patent protection for said INVENTIONS in all countries:

AND WE HEREBY covenant that WE will not execute any writing nor do any act whatsoever conflicting with these presents.

Done at Tokyo, on Nov 6 2014   
LOCATION DATE Masakazu SHIROTA

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Xipeng ZHU

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Arvind SWAMINATHAN

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Jun WANG

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE George CHERIAN



AND WE HEREBY covenant that WE will not execute any writing nor do any act whatsoever conflicting with these presents.

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Masakazu SHIROTA

Done at Beijing, on Nov 4, 2014 朱西平 (Xipeng)  
LOCATION DATE Xipeng ZHU

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Arvind SWAMINATHAN

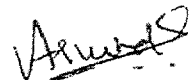
Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Jun WANG

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE George CHERIAN

AND WE HEREBY covenant that WE will not execute any writing nor do any act whatsoever conflicting with these presents.

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Masakazu SHIROTA

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Xipeng ZHU

Done at SAN JOSE, on 11/18/2014  
LOCATION DATE   
Arvind SWAMINATHAN

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Jun WANG

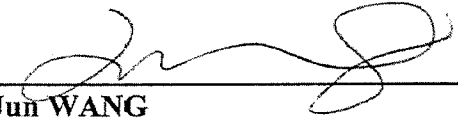
Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE George CHERIAN

AND WE HEREBY covenant that WE will not execute any writing nor do any act whatsoever conflicting with these presents.

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Masakazu SHIROTA

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Xipeng ZHU

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Arvind SWAMINATHAN

Done at San Diego, on 11/7/2014  
LOCATION DATE   
Jun WANG

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE George CHERIAN


AND WE HEREBY covenant that WE will not execute any writing nor do any act whatsoever conflicting with these presents.

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Masakazu SHIROTA

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Xipeng ZHU

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Arvind SWAMINATHAN

Done at \_\_\_\_\_, on \_\_\_\_\_  
LOCATION DATE Jun WANG

Done at San Diego, on 11/17/14  
LOCATION DATE   
George CHERIAN