

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT3743564

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
CONVEYING PARTY DATA	
Name	Execution Date
JING JIANG	01/04/2016
JOSEPH BINAMIRA SORIAGA	01/06/2016
KRISHNA KIRAN MUKKAVILLI	01/04/2016
TINGFANG JI	01/06/2016
HUILIN XU	12/18/2015
NAGA BHUSHAN	01/04/2016
RAGHURAMAN KRISHNAMOORTHY	01/04/2016
PETER PUI LOK ANG	01/06/2016
JOHN EDWARD SMEE	01/06/2016
RECEIVING PARTY DATA	
Name:	QUALCOMM INCORPORATED
Street Address:	5775 MOREHOUSE DRIVE
City:	SAN DIEGO
State/Country:	CALIFORNIA
Postal Code:	92121-1714
PROPERTY NUMBERS Total: 2	
Property Type	Number
Application Number:	14866748
Application Number:	62094721
CORRESPONDENCE DATA	
Fax Number:	(214)200-0853
<i>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.</i>	
Phone:	9727398641
Email:	paula.cunningham@haynesboone.com
Correspondent Name:	HAYNES AND BOONE LLP
Address Line 1:	2323 VICTORY AVENUE
Address Line 2:	SUITE 700
Address Line 4:	DALLAS, TEXAS 75219
ATTORNEY DOCKET NUMBER:	49606.233US01 (150606)

PATENT

NAME OF SUBMITTER:	ADAM C. FOWLES
SIGNATURE:	/Adam C. Fowles/
DATE SIGNED:	02/17/2016
Total Attachments: 8 source=150606 Executed Assignment#page1.tif source=150606 Executed Assignment#page2.tif source=150606 Executed Assignment#page3.tif source=150606 Executed Assignment#page4.tif source=150606 Executed Assignment#page5.tif source=150606 Executed Assignment#page6.tif source=150606 Executed Assignment#page7.tif source=150606 Executed Assignment#page8.tif	

ASSIGNMENT

WHEREAS, WE,

1. **Jing JIANG**, a citizen of **China**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of San Diego, CA,
2. **Joseph Binamira SORIAGA**, a citizen of the **United States of America**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of San Diego, CA,
3. **Krishna Kiran MUKKAVILLI**, a citizen of **India**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of San Diego, CA,
4. **Tingfang JI**, a citizen of the **United States of America**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of San Diego, CA,
5. **Huilin XU**, a citizen of **China**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of San Diego, CA,
6. **Naga BHUSHAN**, a citizen of the **United States of America**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of San Diego, CA,
7. **Raghuraman KRISHNAMOORTHY**, a citizen of the **United States of America**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of San Diego, CA,
8. **Peter Pui Lok ANG**, a citizen of **Canada**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of San Diego, CA,
9. **John Edward SMEE**, a citizen of **Canada**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of San Diego, CA,

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 **COMMON REFERENCE SIGNAL DESIGN BASED ON SEMI-UNIFORM PILOT SPACING AND ORTHOGONAL COVER CODE** (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). **14/866,748** filed **September 25, 2015**, Qualcomm Reference No. **150606**, and all provisional applications relating thereto, together with U.S. Provisional Application No(s). **62/094,721**, filed **December 19, 2014**, Qualcomm Reference No. **150606P1**, (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;

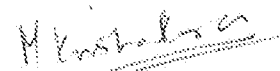
AND WE HEREBY covenant and agree that WE will communicate promptly to said ASSIGNEE, its successors, its legal representatives, and its assigns, any facts known to us respecting said INVENTIONS, and will testify in any legal proceeding, sign all lawful papers, execute all applications and certificates, 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;

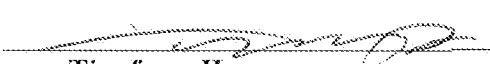
AND WE HEREBY covenant that WE will not execute any writing or do any act whatsoever conflicting with these presents.

Done at San Diego, on 1/4/16
LOCATION DATE

Jing JIANG

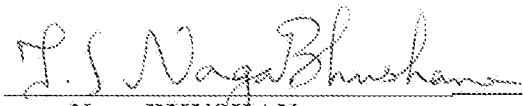
Done at San Diego, on 1/6/16
LOCATION DATE

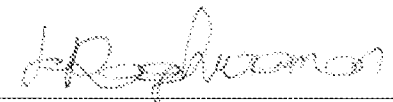
Joseph Binamira SORIAGA

Done at San Diego, on 01/04/16
LOCATION DATE

Krishna Kiran MUKKAVILLI

Done at San Diego, on 1/6/16
LOCATION DATE

Tingfang JI

Done at _____, on _____
LOCATION DATE
Huilin XU

Done at SAN DIEGO, on 1/4/2016
LOCATION DATE

Naga BHUSHAN

Done at San Diego, on 1/4/16
LOCATION DATE

Raghuraman
KRISHNAMOORTHY

Done at San Diego, on 1/6/16
LOCATION DATE


Peter Pui Lok ANG

Done at SANDIEGO, on 1/6/16
LOCATION DATE


John Edward SMEE

ASSIGNMENT

WHEREAS, WE,

1. **Jing JIANG**, a citizen of **China**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of San Diego, CA,
2. **Joseph Binamira SORIAGA**, a citizen of the **United States of America**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of San Diego, CA,
3. **Krishna Kiran MUKKAVILLI**, a citizen of **India**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of San Diego, CA,
4. **Tingfang JI**, a citizen of the **United States of America**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of San Diego, CA,
5. **Huilin XU**, a citizen of **China**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of San Diego, CA,
6. **Naga BHUSHAN**, a citizen of the **United States of America**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of San Diego, CA,
7. **Raghuraman KRISHNAMOORTHY**, a citizen of the **United States of America**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of San Diego, CA,
8. **Peter Pui Lok ANG**, a citizen of **Canada**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of San Diego, CA,
9. **John Edward SMEE**, a citizen of **Canada**, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of San Diego, CA,

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 **COMMON REFERENCE SIGNAL DESIGN BASED ON SEMI-UNIFORM PILOT SPACING AND ORTHOGONAL COVER CODE** (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). **14/866,748** filed **September 25, 2015**, Qualcomm Reference No. **150606**, and all provisional applications relating thereto, together with U.S. Provisional Application No(s). **62/094,721**, filed **December 19, 2014**, Qualcomm Reference No. **150606P1**, (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 or do any act whatsoever conflicting with these presents.

Done at _____, on _____
LOCATION DATE Jing JIANG

Done at _____, on _____
LOCATION DATE Joseph Binamira SORIAGA

Done at _____, on _____
LOCATION DATE Krishan Kiran MUKKAVILLI

Done at _____, on _____
LOCATION DATE Tingfang JI

Done at San Diego, CA, on 12/18/2015
LOCATION DATE [Signature]
Huili XU

Done at _____, on _____
LOCATION DATE Naga BHUSHAN

Done at _____, on _____
LOCATION DATE Raghuraman
KRISHNAMOORTHY

Done at _____, on _____
 LOCATION DATE

Peter Pui Lok ANG

Done at _____, on _____
 LOCATION DATE

John Edward SMEE