

PATENT ASSIGNMENT

Electronic Version v1.1

Stylesheet Version v1.1

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>Rebecca Wen-Ling Yuan</td> <td>03/29/2013</td> </tr> <tr> <td>Raghu N. Challa</td> <td>03/06/2013</td> </tr> <tr> <td>Yuanning Yu</td> <td>04/04/2013</td> </tr> <tr> <td>Michael L. McCloud</td> <td>03/27/2013</td> </tr> </tbody> </table>		Name	Execution Date	Rebecca Wen-Ling Yuan	03/29/2013	Raghu N. Challa	03/06/2013	Yuanning Yu	04/04/2013	Michael L. McCloud	03/27/2013
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Rebecca Wen-Ling Yuan	03/29/2013										
Raghu N. Challa	03/06/2013										
Yuanning Yu	04/04/2013										
Michael L. McCloud	03/27/2013										
RECEIVING PARTY DATA											
Name:	QUALCOMM Incorporated										
Street Address:	5775 Morehouse Drive										
City:	San Diego										
State/Country:	CALIFORNIA										
Postal Code:	92121-1714										
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>13788170</td> </tr> </tbody> </table>		Property Type	Number	Application Number:	13788170						
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Application Number:	13788170										
CORRESPONDENCE DATA											
Fax Number:	7136234846										
<i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i>											
Phone:	(713) 623-4844										
Email:	mmiles@pattersonsheridan.com, PSDocketing@pattersonsheridan.com										
Correspondent Name:	PATTERSON & SHERIDAN, LLP										
Address Line 1:	3040 Post Oak Blvd.										
Address Line 2:	Suite 1500										
Address Line 4:	Houston, TEXAS 77056										
NAME OF SUBMITTER:	Randol W. Read										
Signature:	/Randol W. READ/										

Date:

04/12/2013

Total Attachments: 5

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ASSIGNMENT

WHEREAS, WE,

1. **Rebecca Wen-Ling Yuan**, 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,
2. **Raghu N. Challa**, 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. **Yuanning Yu**, a citizen of The Republic of China, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of Fremont, CA,
4. **Michael L. McCloud**, 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,

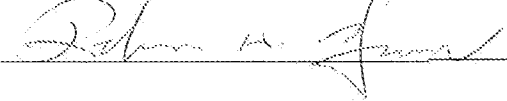
have conceived of one or more processes, methods, machines, articles of manufacture, designs, compositions of matter, inventions, discoveries or new or useful improvements relating to **CHANNEL ESTIMATION IN WIRELESS NETWORKS** (collectively the "INVENTIONS") for which WE have executed and/or may execute 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). 13/788,170 filed March 7, 2013, Qualcomm Reference No. 121627, and all provisional applications relating thereto, together with U.S. Provisional Application No(s). 61/609,167, filed 9 MAR 2012, Qualcomm Reference No. 121627P1, (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,

AND WE HEREBY represent that WE have full and exclusive, unencumbered right to sell, assign, convey and transfer all subject matter herein, and hereby covenant that WE have not and will not execute any writing or do any act whatsoever conflicting with these presents.

Done at _____, on 3/29/2013 
LOCATION DATE **Rebecca Wen-Ling Yuan**

Done at _____, on _____
LOCATION DATE **Raghu N. Challa**

Done at _____, on _____
LOCATION DATE **Yuanning Yu**

Done at _____, on _____
LOCATION DATE **Michael L. McCloud**

AND WE HEREBY represent that WE have full and exclusive, unencumbered right to sell, assign, convey and transfer all subject matter herein, and hereby covenant that WE have not and will not execute any writing or do any act whatsoever conflicting with these presents.

Done at _____, on _____
LOCATION DATE Rebecca W. Yuan

Done at San Diego, on 7/6/2013 [Signature]
LOCATION DATE Raghu N. Challa

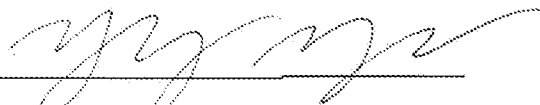
Done at _____, on _____
LOCATION DATE Yuanning Yu

Done at _____, on _____
LOCATION DATE Michael L. McCloud

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Done at _____, on _____
LOCATION DATE Rebecca Wen-Ling Yuan

Done at _____, on _____
LOCATION DATE Raghu N. Challa

Done at Santa Clara, on 4/4/2013
LOCATION DATE 
Yuanning Yu

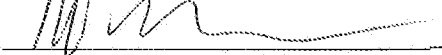
Done at _____, on _____
LOCATION DATE Michael L. McCloud

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Done at _____, on _____
LOCATION DATE Rebecca Wen-Ling Yuan

Done at _____, on _____
LOCATION DATE Raghu N. Challa

Done at _____, on _____
LOCATION DATE Yuanning Yu

Done at San Diego, CA, on 3/27/2013
LOCATION DATE 
Michael L. McCloud