

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT5370269

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT	
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT	
<b>CONVEYING PARTY DATA</b>		
	<b>Name</b>	<b>Execution Date</b>
	SHIWEI GAO	01/21/2015
<b>RECEIVING PARTY DATA</b>		
<b>Name:</b>	BLACKBERRY LIMITED	
<b>Street Address:</b>	2200 UNIVERSITY AVENUE EAST	
<b>City:</b>	WATERLOO, ONTARIO	
<b>State/Country:</b>	CANADA	
<b>Postal Code:</b>	N2K 0A7	
<b>PROPERTY NUMBERS Total: 1</b>		
<b>Property Type</b>	<b>Number</b>	
<b>Application Number:</b>	16153013	
<b>CORRESPONDENCE DATA</b>		
<b>Fax Number:</b>	(877)769-7945	
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<b>ATTORNEY DOCKET NUMBER:</b>	29717-1001004	
<b>NAME OF SUBMITTER:</b>	CHRISTIE LOVEN	
<b>SIGNATURE:</b>	/Christie Loven/	
<b>DATE SIGNED:</b>	02/11/2019	
<b>Total Attachments: 3</b>		
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**WORLDWIDE ASSIGNMENT**

WHEREAS, I/WE, (hereinafter referred to as the "ASSIGNOR(S)");

Shiwei Gao, 78 Roswell Drive, Nepean, Ontario, K2J 0H5, Canada

am an/are inventor(s) of an invention entitled **UPLINK CONTROL CHANNEL RESOURCES ALLOCATION FOR AN ENHANCED DOWNLINK CONTROL CHANNEL OF A MOBILE COMMUNICATION SYSTEM** ("Invention") for which one or more applications for patent, design registration, utility model registration, or other form of protection, rights, or title have been or will be made in certain countries ("Applications") as further described below:

**US Application Provisional # 61/679037, filed on 02 Aug 2012**

**US Application # 13/956984, filed on 01 Aug 2013**

**WO Application# PCT/US2013/053268, filed on 01 Aug 2013**

AND WHEREAS, **BLACKBERRY LIMITED**, (hereinafter referred to as the "ASSIGNEE"), a company organized under the laws of the Province of Ontario, Canada, having a place of business at 2200 University Avenue East, Waterloo, Ontario, N2K 0A7, Canada, is desirous of acquiring the full and exclusive right, title and interest in and to said Invention, said Applications inclusive of all ancillary rights relating thereto, any and all priority rights derived from said Applications, and all patents, design registrations, utility model registrations and other forms of protection, rights and titles relating to said Invention, in any country or countries and in respect of the whole or any part or parts of or improvements to the Invention;

NOW THEREFORE, for valuable consideration, the receipt and sufficiency of which are hereby acknowledged, ASSIGNOR(S) does/do hereby confirm that ASSIGNOR(S) has/have transferred, conveyed and assigned, and by way of further assurance does/do hereby transfer, convey and assign, any and all of ASSIGNOR(S)'s respective rights, title and interest in and to: the Invention; the Applications; inclusive of any and all priority rights, including the right to claim priority, derived from the Applications; any further applications for patent, design registration, utility model registration or other forms of protection, rights or titles for the whole or any part or parts of or improvements to the Invention in any country or countries ("Further Applications") together with the right to file divisional applications, substitute applications and continuation applications of any one or more of the Applications and Further Applications ("Divisionals"); the right to obtain patents, design registrations, utility model registrations and all other forms of protection, rights and titles relating to the Invention; the right in and to any patent or reissue patent relating to the Applications, Further Applications and Divisionals ("Grants"); and the right to obtain any extensions / supplementary protection certificates ("Extensions"); together with the right to bring proceedings to recover damages and/or to obtain other remedies

for acts committed in respect of one or more of the aforesaid Invention, Applications, Grants, Further Applications, Divisionals and Extensions, whether such acts are committed before or after the date of this Worldwide Assignment; with the intent that the Invention, Applications, Grants, Further Applications, Divisionals and Extensions are owned and enjoyed by ASSIGNEE absolutely to the full end of the term or terms for same.

ASSIGNOR(S) does/do hereby agree, upon request, to provide assistance and to execute any and all further documents, at the expense of ASSIGNEE and/or its successors and assigns (as applicable), which may be necessary or desirable to enable ASSIGNEE, and/or its successors and assigns (as applicable), to file, prosecute, bring proceedings and take other actions with respect to any and all of the Invention, Applications, Further Applications, Divisionals, Grants and Extensions, and any and all patents and registrations granted thereon and other forms of protection, rights and titles relating thereto, and ASSIGNOR(S) further agrees/agree to execute, upon request and at the expense of ASSIGNEE and/or its successors and assigns (as applicable), any and all further documents which may be necessary or desirable to vest or perfect the title of ASSIGNEE therein.

ASSIGNOR(S) does/do hereby authorize ASSIGNEE or its patent agents or attorneys to insert, above, the jurisdictions, application numbers, filing dates and any other indicia identifying the Applications when such information is available for the purpose of recording this assignment.

ASSIGNOR(S) does/do hereby authorize and request The Commissioner of Patents or any equivalent authority to issue to ASSIGNEE each and every patent, registration and other form of protection, right, and title granted upon the Applications, Further Applications, Divisionals and Extensions.

THIS WORLDWIDE ASSIGNMENT shall inure to the benefit of ASSIGNEE and its successors and assigns, and shall be binding upon ASSIGNOR(S) and their successors and permitted assigns.

DELIVERY of this Worldwide Assignment by copy, however transmitted, constitutes valid and effective delivery. This Worldwide Assignment may be executed in one or more counterparts, each of which when so executed and delivered shall be an original, and such counterparts shall together constitute one and the same instrument.

IN WITNESS WHEREOF, this Worldwide Assignment has been executed below by the undersigned:



Shiwei Gao,  
78 Roswell Drive,  
Nepean, Ontario,  
K2J 0H5, Canada

Date: Jan. 21, 2015

STATEMENT BY WITNESS

I, Siva Muruganathan, whose full Post Office address is

275 Denali Way, Stittsville, ONTARIO K2S 0R3  
(Address of Witness)

hereby declare that I was personally present and did see the above named person, personally known to me to be a person named in the Worldwide Assignment, duly sign and execute same.

  
(Signature of Witness)

Date: January 21, 2015