

## PATENT ASSIGNMENT COVER SHEET

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<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
TAE-HYOUNG KIM	12/11/2017
YONG-JUN KWAK	11/25/2017
DONG-HAN KIM	12/11/2017
YOUNG-BUM KIM	12/11/2017
SEUNG-HOON CHOI	12/11/2017
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	SAMSUNG ELECTRONICS CO., LTD.
<b>Street Address:</b>	129, SAMSUNG-RO, YEONGTONG-GU
<b>City:</b>	SUWON-SI, GYEONGGI-DO
<b>State/Country:</b>	KOREA, REPUBLIC OF
<b>Postal Code:</b>	16677
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	15842369
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(516)228-8475
<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>	
<b>Phone:</b>	5162283565
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<b>Correspondent Name:</b>	PAUL J. FARRELL
<b>Address Line 1:</b>	290 BROADHOLLOW ROAD
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<b>ATTORNEY DOCKET NUMBER:</b>	678-5516
<b>NAME OF SUBMITTER:</b>	PAUL J. FARRELL
<b>SIGNATURE:</b>	/pjf/
<b>DATE SIGNED:</b>	12/29/2017
<b>Total Attachments: 4</b>	

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## ASSIGNMENT

AS A BELOW NAMED INVENTOR, I, and each of us, individually hereby declare that: IN CONSIDERATION of the sum of TEN (\$10.00) dollars or the equivalent thereof, and other good and valuable consideration, the receipt of which from the hereinafter named Assignee is hereby acknowledged, I do hereby sell, assign and forever grant and convey unto:

**ASSIGNEE: SAMSUNG ELECTRONICS CO., LTD.**

**ADDRESS: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea**

Who is my Assignee, and to the successes and assigns of my Assignee, all my right, title and interest, in and for the United States of America and all other countries, including all rights of priority, in and to the invention entitled:

**TITLE: METHOD AND APPARATUS FOR TRANSMITTING AND RECEIVING DOWNLINK CONTROL CHANNEL IN WIRELESS COMMUNICATION SYSTEM**

invented by me (if only one inventor is named below) or us (if more than one inventor is named below) and described in an application for a United States patent the specification of which is either attached hereto or otherwise accompanies this Assignment or indicates an attorney docket no. (P23472), or is more particularly identified as:

- ☒ executed on even date herewith, or  
☐ Serial No. 15/842,369 filed in the U.S. Patent & Trademark Office on 12/14/2017  
or  
☐ executed on \_\_\_\_\_.

and in and to all United States patents which may be granted thereon and therefore, and in and to all certificates of corrections, divisions, continuations, continuations-in-part, reissued and re-examined patents, and to any extensions thereof, said interest being the entire ownership of the patent when granted, to be held and enjoyed by said **SAMSUNG ELECTRONICS CO., LTD**, my Assignee, its successors, assigns or other legal representatives, to the full end of the term, terms, or any extension or renewal thereof, for which said patent or patents may be granted, as fully and entirely as the same would have been held and enjoyed by me or us if this assignment, sale and conveyance had not been made;

AND I hereby covenant and agree to sign and execute any further documents or instruments which may from time-to-time be either necessary, lawful, proper or requested by the Assignee, in the prosecution of the above-named application or in the preparation and prosecution of any certificate of correction, division, continuation, continuation-in-part, reissue, re-examination, in any amendment, extension, or interference proceeding, whether administrative or judicial, or otherwise, to secure the title hereto in said Assignee;

AND I do hereby authorize and request the Commissioner of Patents and Trademarks to issue said Patent or Patents to the Assignee, and I hereby appoint as my, or our attorney, and authorize and request **Paul J. Farrell, Reg. No. 33,494**, to insert on this Assignment any further identification or to complete such identification which may be either necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

And I further covenant that ASSIGNEE will, upon its request, be provided promptly with all pertinent facts and documents relating to said invention and said Letters Patent and legal equivalents as may be known and accessible to ASSIGNOR and will testify as to the same in any interference, litigation or proceeding related thereto and will promptly execute and deliver to ASSIGNEE or its legal representatives any and all papers, instruments or affidavits required to apply for, obtain, maintain, issue and enforce said application, said invention and said Letters Patent and said equivalents thereof which may be necessary or desirable to carry out the purposes thereof.

IN WITNESS WHEREOF, I and we have set our hands and seals on the dates written beside my and our respective names:

<u>INVENTOR(S)</u>	<u>Date Signed</u>	<u>Witness(es)</u>
1) <u>Taehyoung Kim</u> Tae-Hyoung KIM	(Seal) <u>11. DEC. 2017</u>	_____
2) _____ Yong-Jun KWAK	(Seal) _____	_____
3) <u>Donghan Kim</u> Dong-Han KIM	(Seal) <u>11 - DEC - 2017</u>	_____
4) <u>Young-Bum Kim</u> Young-Bum KIM	(Seal) <u>DEC 11, 2017</u>	_____
5) <u>Seung-Hoon Choi</u> Seung-Hoon CHOI	(Seal) <u>Dec, 11, 2017</u>	_____

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- ☒ executed on even date herewith, or  
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and in and to all United States patents which may be granted thereon and therefore, and in and to all certificates of corrections, divisions, continuations, continuations-in-part, reissued and re-examined patents, and to any extensions thereof, said interest being the entire ownership of the patent when granted, to be held and enjoyed by said **SAMSUNG ELECTRONICS CO., LTD**, my Assignee, its successors, assigns or other legal representatives, to the full end of the term, terms, or any extension or renewal thereof, for which said patent or patents may be granted, as fully and entirely as the same would have been held and enjoyed by me or us if this assignment, sale and conveyance had not been made;

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AND I do hereby authorize and request the Commissioner of Patents and Trademarks to issue said Patent or Patents to the Assignee, and I hereby appoint as my, or our attorney, and authorize and request **Paul J. Farrell, Reg. No. 33,494**, to insert on this Assignment any further identification or to complete such identification which may be either necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

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1) _____ Tae-Hyoung KIM	(Seal) _____	_____
2)  _____ Yong-Jun KWAK	(Seal) <u>25/11/2017</u>	_____
3) _____ Dong-Han KIM	(Seal) _____	_____
4) _____ Young-Bum KIM	(Seal) _____	_____
5) _____ Seung-Hoon CHOI	(Seal) _____	_____