PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT2980329

| SUBMISSION TYPE: | NEW ASSIGNMENT |
|-----------------------|----------------|
| NATURE OF CONVEYANCE: | ASSIGNMENT |

CONVEYING PARTY DATA

| Name | Execution Date |
|---------------------------------|----------------|
| ALEXEI VLADIMIROVICH DAVYDOV | 10/16/2013 |
| GREGORY VLADIMIROVICH MOROZOV | 10/16/2013 |
| SEUNGHEE HAN | 10/16/2013 |
| ALEXANDER ALEXANDROVICH MALTSEV | 10/16/2013 |
| ILYA BOLOTIN | 10/16/2013 |
| VADIM SERGEYEVICH SERGEYEV | 10/16/2013 |
| JONG-KAE FWU | 10/15/2013 |

RECEIVING PARTY DATA

| Name: | INTEL CORPORATION |
|-----------------|----------------------------|
| Street Address: | 2200 MISSION COLLEGE BLVD. |
| City: | SANTA CLARA |
| State/Country: | CALIFORNIA |
| Postal Code: | 95054 |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------|--------------|
| PCT Number: | US2013064385 |

CORRESPONDENCE DATA

Fax Number:

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: 612-373-6900 **Email:** request@slwip.com

Correspondent Name: SCHWEGMAN, LUNDBERG & WOESSNER/INTEL

Address Line 1: PO BOX 2938

Address Line 4: MINNEAPOLIS, MINNESOTA 55402

| ATTORNEY DOCKET NUMBER: | 884.N64WO1 |
|-------------------------|-----------------|
| NAME OF SUBMITTER: | NANCY CUNDALL |
| SIGNATURE: | /Nancy Cundall/ |
| DATE SIGNED: | 08/13/2014 |

Total Attachments: 7

PATENT
REEL: 033528 FRAME: 0117

502933731

| source=884N64WO1Assignment#page1.tif |
|--------------------------------------|
| source=884N64WO1Assignment#page2.tif |
| source=884N64WO1Assignment#page3.tif |
| source=884N64WO1Assignment#page4.tif |
| source=884N64WO1Assignment#page5.tif |
| source=884N64WO1Assignment#page6.tif |
| source=884N64WO1Assignment#page7.tif |

PATENT REEL: 033528 FRAME: 0118

RECORDATION FORM COVER SHEET PATENTS ONLY

Atty Ref/Docket No.: 884.N64WO1 Patent and Trademark Office To the Director of the U.S. Patent and Trademark Office: Please record the attached original documents or copy thereof. 2. Name and address of receiving party(ies): 1. Name of conveying party(ies): Name: Intel Corporation Alexei Vladimirovich Davydov, Gregory Vladimirovich Morozov, Seunghee Han, Alexander Alexandrovich Street Address: 2200 Mission College Blvd. Maltsev, Ilya Bolotin, Vadim Sergeyevich Sergeyev, Jong-Kae Fwu City: Santa Clara State: CA Zip: 95054 Country: United States of America Additional name(s) of conveying party(ies) attached? Additional name(s) & address(es) attached? []Yes [X]No []Yes [X]No 3. Nature of conveyance: [X] Assignment [] Merger [] Security Agreement [] Change of Name [] Other Execution Date: October 16, 2013, October 15, 2013 4. Application number(s) or patent number(s): If this document is being filed together with a new application, the execution date of the application is: A. Patent Application No.(s) B. Patent No.(s) Serial No. PCT/US2013/064385 Additional numbers attached? []Yes [X]No 6. Total number of applications and patents involved: 1 5. Name and address of party to whom correspondence concerning document should be mailed: 7. Total fee (37 CFR 3.41):\$ 0.00 Name: Robert B. Madden [[Enclosed [Authorized to be charged to deposit account 19-Address: 0743 Schwegman, Lundberg & Woessner, P.A. P.O. Box 2938 8. Please charge any additional fees or credit any over Minneapolis, MN 55402--0938 payments to our Deposit Account No.: 19-0743 DO NOT USE THIS SPACE 9. Statement and signature. To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document. Robert B. Madden/Reg. No. 57,521 / Robot B. Midden/ Name of Person Signing Total number of pages including cover sheet: 7 Mail documents to be recorded with required cover sheet information to: **Commissioner of Patents and Trademarks** Mail Stop Assignment Recordation Services

P.O. Box 1450

Alexandria, VA 22313-1450

PATENT REEL: 033528 FRAME: 0119

Intel Docket No.: P56641PCT SLW Reference No.: 884.N648V()

ASSIGNMENT

In consideration of good and valuable consideration, the reorigin of which is hereby acknowledged, we, the undersigned inventor(s):

Alexei Davydov, Gregory Morozov, Seunghee Han, Alexander Maltsev, Ilya Bolotin, Vadim Sergeyev, Jong-Kae Fwu

bereby seil, assign, and transfer to:

Intel Corporation

a corporation of Delaware, having a principal place of business at 2200 Mission College Bentevard, Sama Ciara, California, 98034 USA ("Assignee"), and his successors, assigns, and legal representatives, the entire right, title, and interest for the United States and all other countries, in and to any and all inventions and improvements that are disclosed in the application for the patent entitles:

FAST MODULATION AND CODING SCHEME ADAPTATION PROTOCOL FOR LONG TERM EVOLUTION WITH MULTIPLE-USER MULTIPLE-INPUT, MULTIPLE OUTPUT

(I hereby sufficience and request any attorney having appropriate authority from the assignee to insert on the designated lines below, the filing date and application number of said application when known.)

which was filed on October 10, 2013 as

PCT: Application Number PCT/US2013/064385

which has been executed by the undersigned prior hereto or concurrently herewith on the date(s) indicated below,

and in and to said application and all Additional Applications, and all office patent applications that have been or shall be filled in the United States and all other countries and international filling offices on any of said inventions and improvements; and in and to all original and reiscued patents that have been or shall be assued in the United States and all other countries and international filing offices on said inventions and improvements; and in and to all rights of priority resulting from the filing of said applications: as used herein "Additional Applications" includes but is resill limited to design, utility, utility model, divisional, continuing, continuation-in-part, substitute, renewal, reissue, and national phase applications on said inventions and improvements:

and agree that said Assignee may apply for and receive a patent or patent; for said inventions and improvements in its, own name; and that, when required, without charge to, but at the expense of, said Assignee, in-successors, assigns, and legal expresentatives, to carry but in good faith the intent and purpose of this Assignment, the undersigned will execute all Additional Applications, and all other patent applications on any and all relations ago improvements; execute

Page 1 of 2

all rightful onths, assignments, powers of attorney, and other papers; communicate to said Assignce, its successors, assigns, and legal representatives all facts known to the undersigned relating to said inventions and improvements and the history thereof, and generally assist said Assignee, its successors, assigns, or legal representatives in securing and maintaining proper patent protection for said inventions and improvements and all applications for patents and till patents on said improvements, in said Assignee, its successors, assigns, and legal representatives; and

coverium with said Assignee, its successors, assigns, and legal representatives that no assignment, grant, mortgage, license, or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is presessed by the undersigned.

| 100000 | 0d16 120B |
|-------------------|-------------------|
| AlexeDavydov | Date Signed |
| | <u> </u> |
| Coopery Morozov | Date Signed |
| | |
| Seungbee Han | Date Signed |
| | Och for 16 2 2013 |
| Alexander Maltsev | Date Signed |
| liya Bolotin | <u> </u> |
| | BANE 11, 2013 |
| Vadim Sergeyev | Date Signed |
| | |
| Jong-Kae Fwu | Date Signed |

Intel Docket No.: P56641PCT SLW Reference No.: 884.N648V()

ASSIGNMENT

In consideration of good and valuable consideration, the reorigin of which is hereby acknowledged, we, the undersigned inventor(s):

Alexei Davydov, Gregory Morozov, Seunghee Han, Alexander Maltsev, Ilya Bolotin, Vadim Sergeyev, Jong-Kae Fwu

bereby seil, assign, and transfer to:

Intel Corporation

a corporation of Delaware, having a principal place of business at 2200 Mission College Bentevard, Sama Ciara, California, 98034 USA ("Assignee"), and his successors, assigns, and legal representatives, the entire right, title, and interest for the United States and all other countries, in and to any and all inventions and improvements that are disclosed in the application for the patent entitles:

FAST MODULATION AND CODING SCHEME ADAPTATION PROTOCOL FOR LONG TERM EVOLUTION WITH MULTIPLE-USER MULTIPLE-INPUT, MULTIPLE OUTPUT

(I hereby sufficience and request any attorney having appropriate authority from the assignee to insert on the designated lines below, the filing date and application number of said application when known.)

which was filed on October 10, 2013 as

PCT: Application Number PCT/US2013/064385

which has been executed by the undersigned prior hereto or concurrently herewith on the date(s) indicated below,

and in and to said application and all Additional Applications, and all office patent applications that have been or shall be filled in the United States and all other countries and international filling offices on any of said inventions and improvements; and in and to all original and reiscued patents that have been or shall be assued in the United States and all other countries and international filing offices on said inventions and improvements; and in and to all rights of priority resulting from the filing of said applications: as used herein "Additional Applications" includes but is resill limited to design, utility, utility model, divisional, continuing, continuation-in-part, substitute, renewal, reissue, and national phase applications on said inventions and improvements:

and agree that said Assignee may apply for and receive a patent or patent; for said inventions and improvements in its, own name; and that, when required, without charge to, but at the expense of, said Assignee, in-successors, assigns, and legal expresentatives, to carry but in good faith the intent and purpose of this Assignment, the undersigned will execute all Additional Applications, and all other patent applications on any and all relations ago improvements; execute

Page 1 of 2

Intel Docket No.: P56641PCT SLW Reference No.: 884.N64WO1

all rightful oaths, assignments, powers of attorney, and other papers; communicate to said Assignee, its successors, assigns, and legal representatives all facts known to the undersigned relating to said inventions and improvements and the history thereof; and generally assist said Assignee, its successors, assigns, or legal representatives in securing and maintaining proper patent protection for said inventions and improvements and for vesting title to said inventions and improvements, and all applications for patents and all patents on said improvements, in said Assignee, its successors, assigns, and legal representatives; and

covenant with said Assignee, its successors, assigns, and legal representatives that no assignment, grant, mortgage, license, or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

| Alexei Davydov | Date Signed |
|-------------------|---------------------------|
| Gregory Morozov | Date Signed |
| Seunghee Han | ACY (6 70) Date Signed |
| Alexander Maltsev | Date Signed |
| flys Bolosia | Date Signed |
| Vadim Sergeyev | Date Signed |
| Jong-Kae Fwu | |

Page 2 of 2

Intel Docket No.: P56641PCT SLW Reference No.: 884.N648V()

ASSIGNMENT

In consideration of good and valuable consideration, the reorige of which is hereby acknowledged, we, the undersigned inventor(s):

Alexei Davydov, Gregory Morozov, Seunghee Han, Alexander Maltsev, Ilya Bolotin, Vadim Sergeyev, Jong-Kae Fwu

bereby seil, assign, and transfer to:

Intel Corporation

a corporation of Delaware, having a principal place of business at 2200 Mission College Bentevard, Sama Ciara, California, 98034 USA ("Assignee"), and his successors, assigns, and legal representatives, the entire right, title, and interest for the United States and all other countries, in and to any and all inventions and improvements that are disclosed in the application for the patent entitles:

FAST MODULATION AND CODING SCHEME ADAPTATION PROTOCOL FOR LONG TERM EVOLUTION WITH MULTIPLE-USER MULTIPLE-INPUT, MULTIPLE OUTPUT

(I hereby sufficience and request any attorney having appropriate authority from the assignee to insert on the designated lines below, the filing date and application number of said application when known.)

which was filed on October 10, 2013 as

PCT: Application Number PCT/US2013/064385

which has been executed by the undersigned prior hereto or concurrently herewith on the date(s) indicated below,

and in and to said application and all Additional Applications, and all office patent applications that have been or shall be filled in the United States and all other countries and international filling offices on any of said inventions and improvements; and in and to all original and reiscued patents that have been or shall be assued in the United States and all other countries and international filing offices on said inventions and improvements; and in and to all rights of priority resulting from the filing of said applications: as used herein "Additional Applications" includes but is resill limited to design, utility, utility model, divisional, continuing, continuation-in-part, substitute, renewal, reissue, and national phase applications on said inventions and improvements:

and agree that said Assignee may apply for and receive a patent or patent; for said inventions and improvements in its, own name; and that, when required, without charge to, but at the expense of, said Assignee, in-successors, assigns, and legal expresentatives, to carry but in good faith the intent and purpose of this Assignment, the undersigned will execute all Additional Applications, and all other patent applications on any and all relations ago improvements; execute

Page 1 of 2

Intel Docket No.: P56641PCT SLW Reference No.: 884.N64WO1

all rightful oaths, assignments, powers of attorney, and other papers; communicate to said Assignee, its successors, assigns, and legal representatives all facts known to the undersigned relating to said inventions and improvements and the history thereof; and generally assist said Assignee, its successors, assigns, or legal representatives in securing and maintaining proper patent protection for said inventions and improvements and for vesting title to said inventions and improvements, and all applications for patents and all patents on said improvements, in said Assignea, its successors, assigns, and legal representatives; and

coverant with said Assignee, its successors, assigns, and legal representatives that no assignment, grant, mortgage, license, or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

| Alexei Davydov | Date Signed |
|-------------------|-------------|
| Gregory Morozov | Date Signed |
| Sounghee Han | Date Signed |
| Alexander Malisev | Date Signed |
| liya Bolotin | Date Signed |
| Vadim Sergeyev | Date Signed |
| Mu to | <u> </u> |
| Jöng-Kae Fwo | Date Signed |

Page 2 of 2