

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT3714638

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
CONVEYING PARTY DATA	
Name	Execution Date
JIN GU	11/02/2015
MING YU CHEN	10/30/2015
ELIZA YINGZI DU	11/02/2015
KWOKLEUNG CHAN	12/11/2015
ESRA VURAL	01/22/2016
SAURAV BANDYOPADHYAY	10/30/2015
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	
Property Type	Number
Application Number:	14845174
CORRESPONDENCE DATA	
Fax Number:	(716)849-0349
<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>	
Email:	ezelasko@hodgsonruss.com
Correspondent Name:	ELLEN ZELASKO
Address Line 1:	HODGSON RUSS LLP
Address Line 2:	140 PEARL STREET
Address Line 4:	CHEEKTOWAGA, NEW YORK 14202
ATTORNEY DOCKET NUMBER:	013325.00321
NAME OF SUBMITTER:	RACHEL S. WATT
SIGNATURE:	/rachel s. watt#46186/
DATE SIGNED:	01/27/2016
Total Attachments: 18	

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ASSIGNMENT

WHEREAS, WE,

1. Jin Gu, a citizen of Canada, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of Santa Clara, California,
2. Ming Yu Chen, a citizen of Taiwan, having a mailing address located at 550 Moreland Way, Apt. 2507, Santa Clara, California 95054 and a resident of Santa Clara, California,
3. Eliza Yingzi Du, a citizen of Canada, having a mailing address located at 20155 Las Ondas Court, Cupertino, CA 95014 and a resident of Cupertino, California,
4. Kwokleung Chan, a citizen of Hong Kong, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of Sunnyvale, California,
5. Esra Vural, a citizen of Turkey, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of Santa Clara, California,
6. Saurav Bandyopadhyay, a citizen of India, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of Milpitas, California,

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 **IMAGE-BASED LIVENESS DETECTION FOR ULTRASONIC FINGERPRINTS** (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 Nos. 14/845,174 filed September 3, 2015, Qualcomm Reference No. 145647, 14/845,149 filed September 3, 2015, Qualcomm Reference No. 144882, PCT Patent Application No. PCT/US15/48583, filed September 4, 2015, Qualcomm

Reference No. 144882WO, PCT Patent Application No. PCT/US15/48581, filed September 4, 2015, Qualcomm Reference No. 145647WO and all provisional applications relating thereto, together with U.S. Provisional Application No. 62/046,744, filed September 5, 2014, Qualcomm Reference No. 145647P1, and U.S. Provisional Application No. 62/151,983, filed April 23, 2015, Qualcomm Reference No. 144882P1 (and do hereby authorize ASSIGNEE and its representative to hereafter add herein such application number and/or filing date 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 Markham ON, on Nov 2, 2015
LOCATION DATE

Jin Gu
Jin Gu

Done at _____, on _____
LOCATION DATE

Ming Yu Chen
Ming Yu Chen

Done at _____, on _____
LOCATION DATE

Eliza Yingzi Du
Eliza Yingzi Du

Done at _____, on _____
LOCATION DATE

Kwokleung Chan
Kwokleung Chan

Done at _____, on _____
LOCATION DATE

Esra Vural
Esra Vural

Done at _____, on _____
LOCATION DATE

Saurav Bandyopadhyay
Saurav Bandyopadhyay

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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

Jin Yingzi Gu

Done at Santa Clara, CA, on 12/30/2015
LOCATION DATE

Ming Yu Chen

Done at _____, on _____
LOCATION DATE

Eliza Yingzi Du

Done at _____, on _____
LOCATION DATE

Kwokleung Chan

Done at _____, on _____
LOCATION DATE

Esra Vural

Done at _____, on _____
LOCATION DATE

Saurav Bandyopadhyay

ASSIGNMENT

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Done at _____, on _____
LOCATION DATE Jin Gu

Done at _____, on _____
LOCATION DATE Ming Yu Chen

Done at Cupertino, CA, on 11/2/2015
LOCATION DATE Eliza Yingzi Du

Done at _____, on _____
LOCATION DATE Kwokleung Chan

Done at _____, on _____
LOCATION DATE Esra Vural

Done at _____, on _____
LOCATION DATE Saurav Bandyopadhyay

ASSIGNMENT

WHEREAS, WE,

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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 **IMAGE-BASED LIVENESS DETECTION FOR ULTRASONIC FINGERPRINTS** (collectively the "INVENTIONS") for which WE have executed and/or may execute one or more patent applications therefor; and

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Done at _____, on _____
LOCATION DATE
Jin Gu

Done at _____, on _____
LOCATION DATE
Ming Yu Chen

Done at _____, on _____
LOCATION DATE
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Kwokleung Chan

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LOCATION DATE
Esra Vural

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Saurav Bandyopadhyay

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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

Jin Gu

Done at _____, on _____
LOCATION DATE

Ming Yu Chen

Done at _____, on _____
LOCATION DATE

Eliza Yingzi Du

Done at _____, on _____
LOCATION DATE

Kwokleung Chan

Done at _____, on 01/22/16
LOCATION DATE



Esra Vural

Done at _____, on _____
LOCATION DATE

Saurav Bandyopadhyay

ASSIGNMENT

WHEREAS, WE,

1. **Jin Yingzi Gu**, a citizen of Canada, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of Santa Clara, California,
2. **Ming Yu Chen**, a citizen of Taiwan, having a mailing address located at 550 Moreland Way, Apt. 2507, Santa Clara, California 95054 and a resident of Santa Clara, California,
3. **Eliza Yingzi Du**, a citizen of Canada, having a mailing address located at 20155 Las Ondas Court, Cupertino, CA 95014 and a resident of Cupertino, California,
4. **Kwokleung Chan**, a citizen of Hong Kong, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of Sunnyvale, California,
5. **Esra Vural**, a citizen of Turkey, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of Santa Clara, California,
6. **Saurav Bandyopadhyay**, a citizen of India, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121 and a resident of Milpitas, California,

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 **IMAGE-BASED LIVENESS DETECTION FOR ULTRASONIC FINGERPRINTS** (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 Nos. 14/845,174 filed September 3, 2015, Qualcomm Reference No. 145647, 14/845,149 filed September 3, 2015, Qualcomm Reference No. 144882, PCT Patent Application No. PCT/US15/48583, filed September 4, 2015, Qualcomm

Reference No. 144882WO, PCT Patent Application No. PCT/US15/48581, filed September 4, 2015, Qualcomm Reference No. 145647WO and all provisional applications relating thereto, together with U.S. Provisional Application No. 62/046,744, filed September 5, 2014, Qualcomm Reference No. 145647P1, and U.S. Provisional Application No. 62/151,983, filed April 23, 2015, Qualcomm Reference No. 144882P1 (and do hereby authorize ASSIGNEE and its representative to hereafter add herein such application number and/or filing date 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

Jin Yingzi Gu

Done at _____, on _____
LOCATION DATE

Ming Yu Chen

Done at _____, on _____
LOCATION DATE

Eliza Yingzi Du

Done at _____, on _____
LOCATION DATE

Kwokleung Chan

Done at _____, on _____
LOCATION DATE

Esra Vural

Done at SANTA CLARA, on 2015/10/30
CA LOCATION DATE

Saurav Bandyopadhyay