505240611 12/17/2018

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2

SUBMISSION TYPE: NEW ASSIGNMENT

NATURE OF CONVEYANCE: ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
NAVID ABEDINI	09/20/2018
MUHAMMAD NAZMUL ISLAM	09/21/2018
BILAL SADIQ	09/27/2018
PETER GAAL	09/21/2018
HAITONG SUN	09/28/2018

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:	16028312	

CORRESPONDENCE DATA

Fax Number: (713)623-4846

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: 713-623-4844

Email: cstepanek@pattersonsheridan.com,

psdocketing@pattersonsheridan.com

Correspondent Name: PATTERSON & SHERIDAN, LLP

Address Line 1: 24 GREENWAY PLAZA

Address Line 2: SUITE 1600

Address Line 4: HOUSTON, TEXAS 77046

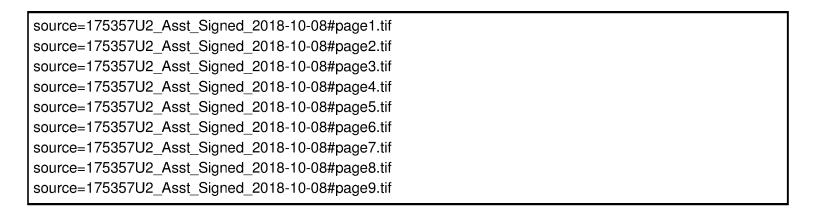
ATTORNEY DOCKET NUMBER:	175357US02
NAME OF SUBMITTER:	ANKUR GARG
SIGNATURE:	/Ankur Garg/
DATE SIGNED:	12/17/2018

Total Attachments: 9

PATENT REEL: 047798 FRAME: 0472

EPAS ID: PAT5287391

505240611



ASSIGNMENT

WHEREAS, WE,

- 1. **Navid ABEDINI,** a citizen of **Iran,** having a mailing address located at **5775 Morehouse Drive, San Diego, CA 92121** and a resident of **Somerset, New Jersey,**
- 2. **Muhammad Nazmul ISLAM**, a citizen of **Bangladesh**, having a mailing address located at **5775 Morehouse Drive**, **San Diego**, **CA 92121** and a resident of **Edison**, **New Jersey**,
- 3. **Bilal SADIQ,** a citizen of **Pakistan,** having a mailing address located at **5775 Morehouse Drive, San Diego, CA 92121** and a resident of **Basking Ridge, New Jersey,**
- 4. **Peter GAAL**, 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**, **California**;
- 5. **Haitong SUN**, a citizen of the **People's Republic of China**, having a mailing address located at **19319 Stevens Creek Boulevard 94-DEF**, **Cupertino**, **CA 95014** and a resident of **Cupertino**, **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 **REFERENCE SIGNAL DESIGN** (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). 16/028,312 filed July 05, 2018, Qualcomm Reference No. 175357U2 and all provisional applications relating thereto, together with U.S. Provisional Application No(s). 62/532,851 filed July 14, 2017 Qualcomm Reference No. 175357P1, (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, 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;

Done at Braggers on 9-20-18
LOCATION DATE Navid ABEDINI

Done at Braggers on 9-21-18
LOCATION DATE Muhammad Nazmul ISLAM

Done at LOCATION DATE Bild SADIQ

Done at LOCATION DATE Peter GAAL

AND WE HEREBY covenant that WE will not execute any writing or do any act

PATENT REEL: 047798 FRAME: 0476

Haitong SUN

ASSIGNMENT

WHEREAS, WE,

- 1. **Navid ABEDINI,** a citizen of **Iran,** having a mailing address located at **5775 Morehouse Drive, San Diego, CA 92121** and a resident of **Somerset, New Jersey,**
- 2. **Muhammad Nazmul ISLAM,** a citizen of **Bangladesh,** having a mailing address located at **5775 Morehouse Drive, San Diego, CA 92121** and a resident of **Edison, New Jersey,**
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- 4. **Peter GAAL**, 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**, **California**;
- 5. **Haitong SUN**, a citizen of the **People's Republic of China**, having a mailing address located at **19319 Stevens Creek Boulevard 94-DEF**, **Cupertino**, **CA 95014** and a resident of **Cupertino**, **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 **REFERENCE SIGNAL DESIGN** (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). 16/028,312 filed July 05, 2018, Qualcomm Reference No. 175357U2 and all provisional applications relating thereto, together with U.S. Provisional Application No(s). 62/532,851 filed July 14, 2017 Qualcomm Reference No. 175357P1, (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

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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	, on	Navid ABEDINI
Done at _	LOCATION	on	Muhammad Nazmul ISLAM
Done at _		, on DATE	
	LOCATION	DATE	Bilal SADIQ
Done at 6	Son D'i es	on 09/21/2018	Peter GAAL
Done at _	LOCATION	DATE	Peter GAAL
Done at_	····	, on DATE	
	LOCATION	DATE	Haitong SUN

ASSIGNMENT

WHEREAS, WE,

- 1. **Navid ABEDINI,** a citizen of **Iran,** having a mailing address located at **5775 Morehouse Drive, San Diego, CA 92121** and a resident of **Somerset, New Jersey,**
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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;

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PATENT QUALCOMM Ref. No. 175357U2 Page 3 of 3

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	Navid ABEDINI
Done at _		, on		
	LOCATION		DATE	Muhammad Nazmul ISLAM
Done at	LOCUMION	, on	DATE	
	LOCATION			Bilal SADIQ
				Peter GAAL
Done at	<u> </u>	, on	<u>09/28/2018</u> DATE	
	LOCATION		DATE	Haitong SUN

PATENT REEL: 047798 FRAME: 0482

RECORDED: 12/17/2018