

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT5263516

SUBMISSION TYPE:	CORRECTIVE ASSIGNMENT
NATURE OF CONVEYANCE:	Corrective Assignment to correct the EXECUTION DATE FOR THE 2ND INVENTOR AND SUPPORTING DOCUMENTS previously recorded on Reel 046428 Frame 0028. Assignor(s) hereby confirms the EXECUTION DATE IS 09-18-2018 AND SUPPORTING DOCUMENTS ATTACHED.
CONVEYING PARTY DATA	
Name	Execution Date
SRINIVASAN BALASUBRAMANIAN	06/29/2018
NEHA GOEL	09/18/2018
RAMACHANDRAN SUBRAMANIAN	06/27/2018
SHAILESH MAHESHWARI	07/17/2018
KIRANKUMAR BHOJA ANCHAN	06/27/2018
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:	15960519
CORRESPONDENCE DATA	
Fax Number:	
<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:	meo.docket@MG-IP.COM
Correspondent Name:	MUNCY, GEISSLER, OLDS & LOWE, P.C./QC
Address Line 1:	4000 LEGATO ROAD, SUITE 310
Address Line 4:	FAIRFAX, VIRGINIA 22033
ATTORNEY DOCKET NUMBER:	QC173528
NAME OF SUBMITTER:	SAMANTHA PITTENGER
SIGNATURE:	/Samantha Pittenger/
DATE SIGNED:	12/03/2018
Total Attachments: 21	

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PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT5062309

SUBMISSION TYPE:	NEW ASSIGNMENT	
NATURE OF CONVEYANCE:	ASSIGNMENT	
CONVEYING PARTY DATA		
	Name	Execution Date
	SRINIVASAN BALASUBRAMANIAN	06/29/2018
	NEHA GOEL	06/28/2018
	RAMACHANDRAN SUBRAMANIAN	06/27/2018
	SHAILESH MAHESHWARI	07/17/2018
	KIRANKUMAR BHOJA ANCHAN	06/27/2018
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:	15960519	
CORRESPONDENCE DATA		
Fax Number:		
<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:	meo.docket@mg-ip.com	
Correspondent Name:	MUNCY, GEISSLER, OLDS & LOWE, P.C./QC	
Address Line 1:	4000 LEGATO ROAD, SUITE 310	
Address Line 4:	FAIRFAX, VIRGINIA 22033	
ATTORNEY DOCKET NUMBER:	QC173528	
NAME OF SUBMITTER:	SAMANTHA PITTENGER	
SIGNATURE:	/Samantha Pittenger/	
DATE SIGNED:	07/23/2018	
Total Attachments: 15		
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source=173528_ASG_2018-07-23_signed#page2.tif		



UNITED STATES PATENT AND TRADEMARK OFFICE

UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

JULY 24, 2018

PTAS

MUNCY, GEISSLER, OLDS & LOWE, P.C./QC
4000 LEGATO ROAD, SUITE 310
FAIRFAX, VA 22033

505015561

UNITED STATES PATENT AND TRADEMARK OFFICE NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT

THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT RECORDATION BRANCH OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE ASSIGNMENT RECORDATION BRANCH AT 571-272-3350. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, MAIL STOP: ASSIGNMENT RECORDATION BRANCH, P.O. BOX 1450, ALEXANDRIA, VA 22313.

RECORDATION DATE: 07/23/2018

REEL/FRAME: 046428/0028
NUMBER OF PAGES: 17

BRIEF: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).

DOCKET NUMBER: QC173528

ASSIGNOR:

BALASUBRAMANIAN, SRINIVASAN

DOC DATE: 06/29/2018

ASSIGNOR:

GOEL, NEHA

DOC DATE: ~~06/28/2018~~ 09/18/2018

ASSIGNOR:

SUBRAMANIAN, RAMACHANDRAN

DOC DATE: 06/27/2018

ASSIGNOR:

MAHESHWARI, SHAILESH

DOC DATE: 07/17/2018

ASSIGNOR:

ANCHAN, KIRANKUMAR BHOJA

DOC DATE: 06/27/2018

ASSIGNEE:

QUALCOMM INCORPORATED
5775 MOREHOUSE DRIVE
SAN DIEGO, CALIFORNIA 92121-1714

APPLICATION NUMBER: 15960519

FILING DATE: 04/23/2018

PATENT NUMBER:

ISSUE DATE:

TITLE: OPTIMIZED UPLINK OPERATION FOR VOICE OVER LONG-TERM EVOLUTION
(VOLTE) AND VOICE OVER NEW RADIO (VONR) LISTEN OR SILENT PERIODS

ASSIGNMENT RECORDATION BRANCH
PUBLIC RECORDS DIVISION

ASSIGNMENT

WHEREAS, WE,

1. **Srinivasan BALASUBRAMANIAN**, a citizen of the **United States of America**, having a mailing address located at **7755 Chadamy Way, San Diego, CA 92130** and a resident of **San Diego, CA**,
2. **Neha GOEL**, a citizen of **India**, having a mailing address located at **3160 John Glenn St Unit 202, Herndon, VA 20171** and a resident of **Herndon, VA**,
2/29 9/18/2018
3. **Ramachandran SUBRAMANIAN**, a citizen of **India**, having a mailing address located at **5775 Morehouse Drive, San Diego, CA 92121-1714** and a resident of **San Diego, CA**,
4. **Shailesh MAHESHWARI**, a citizen of **India**, having a mailing address located at **5775 Morehouse Drive, San Diego, CA 92121-1714** and a resident of **San Diego, CA**, and
5. **Kirankumar Bhoja ANCHAN**, a citizen of the **United States of America**, having a mailing address located at **5775 Morehouse Drive, San Diego, CA 92121-1714** and a resident of **San Diego, CA**,

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 **OPTIMIZED UPLINK OPERATION FOR VOICE OVER LONG-TERM EVOLUTION (VOLTE) AND VOICE OVER NEW RADIO (VONR) LISTEN OR SILENT PERIODS** (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. **15/960,519** filed **April 23, 2018**, Qualcomm Reference No. **173528**, and all provisional applications relating thereto, together with U.S. Provisional Application No. **62/490,022**, filed **April 25, 2017**, Qualcomm Reference No. **173528P1**, (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;

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

Srinivasan BALASUBRAMANIAN

Done at HERNDON, VA, on 9/18/2018
LOCATION DATE

Neha Goel
Neha GOEL

Done at _____, on _____
LOCATION DATE

Ramachandran SUBRAMANIAN

Done at _____, on _____
LOCATION DATE

Shailesh MAHESHWARI

Done at _____, on _____
LOCATION DATE

Kirankumar Bhoja ANCHAN

ASSIGNMENT

WHEREAS, WE,

1. Srinivasan BALASUBRAMANIAN, a citizen of the United States of America, having a mailing address located at 7755 Chadamy Way, San Diego, CA 92130 and a resident of San Diego, CA,
2. Neha GOEL, a citizen of India, having a mailing address located at 3160 John Glenn St Unit 202, Herndon VA 20171 and a resident of Herndon, VA,
3. Ramachandran SUBRAMANIAN, a citizen of India, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714 and a resident of San Diego, CA,
4. Shailesh MAHESHWARI, a citizen of India, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714 and a resident of San Diego, CA, and
5. Kirankumar Bhoja ANCHAN, a citizen of the United States of America, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714 and a resident of San Diego, CA,

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 **OPTIMIZED UPLINK OPERATION FOR VOICE OVER LONG-TERM EVOLUTION (VOLTE) AND VOICE OVER NEW RADIO (VONR) LISTEN OR SILENT PERIODS** (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. 15/960,519 filed April 23, 2018, Qualcomm Reference No. 173528, and all provisional applications relating thereto, together with U.S. Provisional Application No. 62/490,022, filed April 25, 2017, Qualcomm Reference No. 173528P1, (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;

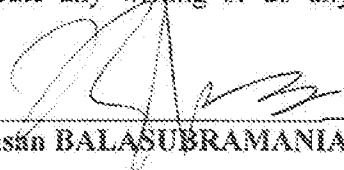
AND WE DO HEREBY authorize and request the Commissioner of Patents of the United States, and any Official of any country or countries foreign to the United States, whose duty it is to issue patents on applications or registrations, to issue all patents for said INVENTIONS to said ASSIGNEE, its successors, 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;

AND WE HEREBY covenant that WE will not execute any writing or do any act whatsoever conflicting with these presents.

Done at San Diego, on 05/29/2018
LOCATION DATE


Srinivasan BALASUBRAMANIAN

Done at _____, on _____
LOCATION DATE

Neha GOEL

Done at _____, on _____
LOCATION DATE

Ramachandran SUBRAMANIAN

Done at _____, on _____
LOCATION DATE

Shailesh MAHESHWARI

Done at _____, on _____
LOCATION DATE

Kirankumar Bhoja ANCHAN

ASSIGNMENT

WHEREAS, WE,

1. Srinivasan BALASUBRAMANIAN, a citizen of the United States of America, having a mailing address located at 7755 Chadamy Way, San Diego, CA 92130 and a resident of San Diego, CA,
2. Neha GOEL, a citizen of India, having a mailing address located at 3160 John Glenn St Unit 202, Herndon VA 20171 and a resident of Herndon, VA,
3. Ramachandran SUBRAMANIAN, a citizen of India, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714 and a resident of San Diego, CA,
4. Shailesh MAHESHWARI, a citizen of India, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714 and a resident of San Diego, CA, and
5. Kirankumar Bhoja ANCHAN, a citizen of the United States of America, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714 and a resident of San Diego, CA,

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 **OPTIMIZED UPLINK OPERATION FOR VOICE OVER LONG-TERM EVOLUTION (VOLTE) AND VOICE OVER NEW RADIO (VONR) LISTEN OR SILENT PERIODS** (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. 15/960,519 filed April 23, 2018, Qualcomm Reference No. 173528, and all provisional applications relating thereto, together with U.S. Provisional Application No. 62/490,022, filed April 25, 2017, Qualcomm Reference No. 173528P1, (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;

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 Srinivasan BALASUBRAMANIAN

Done at USA, on 28-6-2018
LOCATION DATE Neha
Neha GOEL

Done at _____, on _____
LOCATION DATE Ramachandran SUBRAMANIAN

Done at _____, on _____
LOCATION DATE Shallesh MAHESHWARI

Done at _____, on _____
LOCATION DATE Kirankumar Bhoja ANCHAN

ASSIGNMENT

WHEREAS, WE,

1. Srinivasan BALASUBRAMANIAN, a citizen of the United States of America, having a mailing address located at 7755 Chadamy Way, San Diego, CA 92130 and a resident of San Diego, CA,
2. Neha GOEL, a citizen of India, having a mailing address located at 3160 John Glenn St Unit 202, Herndon VA 20171 and a resident of Herndon, VA,
3. Ramachandran SUBRAMANIAN, a citizen of India, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714 and a resident of San Diego, CA,
4. Shailesh MAHESHWARI, a citizen of India, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714 and a resident of San Diego, CA, and
5. Kirankumar Bhoja ANCHAN, a citizen of the United States of America, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714 and a resident of San Diego, CA,

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 **OPTIMIZED UPLINK OPERATION FOR VOICE OVER LONG-TERM EVOLUTION (VOLTE) AND VOICE OVER NEW RADIO (VONR) LISTEN OR SILENT PERIODS** (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. 15/960,519 filed April 23, 2018, Qualcomm Reference No. 173528, and all provisional applications relating thereto, together with U.S. Provisional Application No. 62/490,022, filed April 25, 2017, Qualcomm Reference No. 173528P1, (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;

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 Srinivasan BALASUBRAMANIAN

Done at _____, on _____
LOCATION DATE Neha GOEL

Done at San Diego, on 6/27/2018
LOCATION DATE Ramachandran SUBRAMANIAN

Done at _____, on _____
LOCATION DATE Shaillesh MAHESHWARI

Done at _____, on _____
LOCATION DATE Kirankumar Bhoja ANCHAN

ASSIGNMENT

WHEREAS, WE,

1. Srinivasan BALASUBRAMANIAN, a citizen of the United States of America, having a mailing address located at 7755 Chadamy Way, San Diego, CA 92130 and a resident of San Diego, CA,
2. Neha GOEL, a citizen of India, having a mailing address located at 3160 John Glenn St Unit 202, Herndon VA 20171 and a resident of Herndon, VA,
3. Ramachandran SUBRAMANIAN, a citizen of India, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714 and a resident of San Diego, CA,
4. Shailesh MAHESHWARI, a citizen of India, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714 and a resident of San Diego, CA, and
5. Kirankumar Bhoja ANCHAN, a citizen of the United States of America, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714 and a resident of San Diego, CA,

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 **OPTIMIZED UPLINK OPERATION FOR VOICE OVER LONG-TERM EVOLUTION (VOLTE) AND VOICE OVER NEW RADIO (VONR) LISTEN OR SILENT PERIODS** (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. 15/960,519 filed April 23, 2018, Qualcomm Reference No. 173528, and all provisional applications relating thereto, together with U.S. Provisional Application No. 62/490,022, filed April 25, 2017, Qualcomm Reference No. 173528P1, (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;

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 Srinivasan BALASUBRAMANIAN

Done at _____, on _____
LOCATION DATE Neha GOEL

Done at _____, on _____
LOCATION DATE Ramachandran SUBRAMANIAN

Done at San Diego, on 7/17/18
LOCATION DATE Shailesh Maheshwari
Shailesh MAHESHWARI

Done at _____, on _____
LOCATION DATE Kirankumar Bhoja ANCHAN

ASSIGNMENT

WHEREAS, WE,

1. Srinivasan BALASUBRAMANIAN, a citizen of the United States of America, having a mailing address located at 7755 Chadamy Way, San Diego, CA 92130 and a resident of San Diego, CA,
2. Neha GOEL, a citizen of India, having a mailing address located at 3160 John Glenn St Unit 202, Herndon VA 20171 and a resident of Herndon, VA,
3. Ramachandran SUBRAMANIAN, a citizen of India, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714 and a resident of San Diego, CA,
4. Shailesh MAHESHWARI, a citizen of India, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714 and a resident of San Diego, CA, and
5. Kirankumar Bhoja ANCHAN, a citizen of the United States of America, having a mailing address located at 5775 Morehouse Drive, San Diego, CA 92121-1714 and a resident of San Diego, CA,

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 **OPTIMIZED UPLINK OPERATION FOR VOICE OVER LONG-TERM EVOLUTION (VOLTE) AND VOICE OVER NEW RADIO (VONR) LISTEN OR SILENT PERIODS** (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. 15/960,519 filed April 23, 2018, Qualcomm Reference No. 173528, and all provisional applications relating thereto, together with U.S. Provisional Application No. 62/490,022, filed April 25, 2017, Qualcomm Reference No. 173528P1, (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;

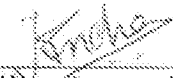
AND WE HEREBY covenant that WE will not execute any writing or do any act whatsoever conflicting with these presents.

Done at _____, on _____
LOCATION DATE Srinivasan BALASUBRAMANIAN

Done at _____, on _____
LOCATION DATE Neha GOEL

Done at _____, on _____
LOCATION DATE Ramachandran SUBRAMANIAN

Done at _____, on _____
LOCATION DATE Shallesh MAHESHWARI

Done at _____, on 6/27/2018
LOCATION DATE  Kirankumar Bhoja ANCHAN