

## PATENT ASSIGNMENT COVER SHEET

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EPAS ID: PAT7311196

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
CONVIDA WIRELESS, LLC	04/09/2022
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	INTERDIGITAL PATENT HOLDINGS, INC.
<b>Street Address:</b>	200 BELLEVUE PARKWAY
<b>Internal Address:</b>	SUITE 300
<b>City:</b>	WILMINGTON
<b>State/Country:</b>	DELAWARE
<b>Postal Code:</b>	19809-3727
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	17280322
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(215)564-3439
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<b>Correspondent Name:</b>	BAKERHOSTETLER
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<b>Address Line 4:</b>	PHILADELPHIA, PENNSYLVANIA 19103-7501
<b>ATTORNEY DOCKET NUMBER:</b>	100858.401176
<b>NAME OF SUBMITTER:</b>	FAITH POORE HOUSER
<b>SIGNATURE:</b>	/Faith Poore Houser/
<b>DATE SIGNED:</b>	05/03/2022
<b>Total Attachments: 53</b>	
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source=Confirmatory_Assignment_Convida_to_InterDigital#page4.tif	





**CONFIRMATORY PATENT ASSIGNMENT**

This CONFIRMATORY PATENT ASSIGNMENT, effective as of March 10, 2022, is made by and between **CONVIDA WIRELESS, LLC**, a limited liability company organized under the laws of Delaware having a place of business at 200 Bellevue Parkway, Suite 300, Wilmington, DE 19809 (“Assignor”), and **INTERDIGITAL PATENT HOLDINGS, INC.**, a Delaware corporation having a place of business at 200 Bellevue Parkway, Suite 300, Wilmington, DE 19809 (“Assignee”).

**WHEREAS:**

Assignor previously executed a Patent Assignment on March 2, 2022 (“Patent Assignment”) with respect to certain United States and/or foreign patents and/or patent applications listed in Exhibit A attached hereto (hereinafter “Patents”);

Assignee previously acquired the entire right, title and interest in, to and under the Patents as a result of said Patent Assignment;

The executed Patent Assignment contained one or more informalities; and

Assignor and Assignee are desirous of correcting such informalities and memorializing and confirming the prior transfer of the Patents.

NOW, THEREFORE, for good and valuable consideration, receipt of which is hereby acknowledged, and intending to be legally bound hereby, Assignor hereby confirms that as of March 10, 2022, Assignor intended to and previously has sold, assigned, transferred and conveyed to Assignee the entire right, title and interest in and to any and all of the following:

- (i) the Patents, including any and all inventions, invention disclosures, improvements and discoveries disclosed or claimed therein (hereinafter “Inventions”), for the United States, its possessions and territories and all foreign countries, regions and territories;
- (ii) the rights of priority created by the Patents under any treaty relating thereto, including the rights to apply for patents and patent applications covering the Inventions in any and all countries, regions and territories;
- (iii) any and all patents and patent applications, certificates of invention, utility models and any other grants by any governmental entity for the protection of inventions resulting from the Patents, in any and all countries, regions and territories, including any and all patents and patent applications disclosing the Inventions and any patents issuing from such applications, including provisionals, non-provisionals, divisionals, continuations, continuations-in-part, reissues, extensions, renewals, substitutions and re-examinations of the Patents; and
- (iv) all past, present and future causes of action and enforcement rights, whether currently pending, filed or otherwise, in connection with the Patents, the patents and patent applications resulting from the Patents and the Inventions, including without limitation, all rights to sue for any past, present or future infringement thereof, including the rights to license and to collect and receive any damages, royalties, injunctive relief, and/or any other settlements or remedies for such infringements, and including any provisional rights having arisen from any publication of any of the Patents or any patent application resulting therefrom,

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the same to be held and enjoyed by Assignee for its own use and enjoyment, and for the use and enjoyment of its successors, assigns and other legal representatives, as fully and entirely as the same would have been held and enjoyed by Assignor, if this Confirmatory Assignment had not been made.

AND, this Confirmatory Assignment may be executed in multiple counterparts, each of which shall be deemed to be an original of this Confirmatory Assignment.

IN WITNESS WHEREOF, Assignor and Assignee, by and through their respective authorized representative, have executed this instrument on the date indicated below.

SIGNED for and on behalf of **CONVIDA WIRELESS, LLC**

By	<small>DocuSigned by:</small> <u>Arty Chandra</u> <small>(Signature) CA3B2479...</small>	<u>09 April 2022</u> <small>(Date)</small>
	<u>Arty Chandra</u> <small>(Print Name)</small>	<u>Manager</u> <small>(Print Title)</small>

SIGNED for and on behalf of **INTERDIGITAL PATENT HOLDINGS, INC.**

By	<small>DocuSigned by:</small> <u>Christos Ioannidi</u> <small>(Signature) 4D934150F5EE41E...</small>	<u>05 April 2022</u> <small>(Date)</small>
	<u>Christos Ioannidi</u> <small>(Print Name)</small>	<u>Senior Patent Executive</u> <small>(Print Title)</small>

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

**EXHIBIT A**

Country	Application No.	Patent or Publication No.	Filing Date	Title
CN	201480037425.8	ZL201480037425.8	05/22/2014	Access Network Assisted Bootstrapping
DE	14733809.9	60 2014 067 475.5	05/22/2014	Access Network Assisted Bootstrapping
FR	14733809.9	3000249	05/22/2014	Access Network Assisted Bootstrapping
GB	14733809.9	3000249	05/22/2014	Access Network Assisted Bootstrapping
IN	11393/DELNP/2015		05/22/2014	Access Network Assisted Bootstrapping
JP	2016-515092	6152470	05/22/2014	Access Network Assisted Bootstrapping
JP	2017-105521	6373453	05/22/2014	Access Network Assisted Bootstrapping
KR	10-2015-7036312	10-1881844	05/22/2014	Access Network Assisted Bootstrapping
KR	10-2018-7020849		05/22/2014	Access Network Assisted Bootstrapping
US	14/285,180	9,392,459	05/22/2014	Access Network Assisted Procedures and Messaging for Service Layer Bootstrapping, including enhancements to GBA, EAP, and PANA bootstrapping methods.
US	15/207,163	10,243,954	05/22/2014	Access Network Assisted Bootstrapping
US	61/826,176		05/22/2013	Access Network Assisted Procedures and Messaging for Service Layer Bootstrapping, including enhancements to GBA, EAP, and PANA bootstrapping methods.
WO	PCT/US14/39188	WO2014/190177	05/22/2014	Access Network Assisted Bootstrapping
EP	14733809.9	3000249	05/22/2014	Access Network Assisted Bootstrapping
CN	201480039769.2	ZL201480039769.2	06/12/2014	Context and Power Control Information Management for Proximity Services
EP	14738951.4	3008956	06/12/2014	Context and Power Control Information Management for Proximity Services
IN	11493/DELNP/2015		06/12/2014	Context and Power Control Information Management for Proximity Services
JP	2016-519650	6250799	06/12/2014	Context and Power Control Information Management for Proximity Services
JP	2017-224729	6522088	06/12/2014	Context and Power Control Information Management for Proximity Services
KR	10-2016-7000544	10-1891005	06/12/2014	Context and Power Control Information Management for Proximity Services
KR	10-2018-7023475		06/12/2014	Context and Power Control Information Management for Proximity Services
US	14/303,291	10,135,759	06/12/2014	Context and Power Control Information Management for Proximity Services

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Country	Application No.	Patent or Publication No.	Filing Date	Title
US	61/834,335		06/12/2013	Context and Power Control Information Management for Proximity Services
WO	PCT/US14/42128	WO2014/201251	06/12/2014	Context and Power Control Information Management for Proximity Services
CN	201480039731.5	ZL201480039731.5	06/12/2014	CONTEXT AND POWER CONTROL INFORMATION MANAGEMENT FOR PROXIMITY SERVICES
IN	11491/DELNP/2015		06/12/2014	Context-aware Power Control for Proximity Services
JP	2016-519649	6257756	06/12/2014	Context-aware Power Control for Proximity Services
JP	2017-233480	6480553	06/12/2014	Context-aware Power Control for Proximity Services
KR	10-2016-7000547	10-2044062	06/12/2014	Context-aware Power Control for Proximity Services
KR	10-2018-7018852		06/12/2014	Context-aware Power Control for Proximity Services
US	14/303,228	10,531,406	06/12/2014	Context And Power Control Information Management For Proximity Services
US	61/834,341		06/12/2013	Context-aware Power Control for Proximity Services
WO	PCT/US14/42107	WO2014/201240	06/12/2014	Context-aware Power Control for Proximity Services
EP	14738949.8	3008955	06/12/2014	Context-aware Power Control for Proximity Services
CN	201480040702.0	ZL 201480040702.0	07/18/2014	BILLING OF RELAYED DEVICE
EP	14748399.4	3022952	07/18/2014	Charging Capillary Network Devices who have no relationship with the gateway or network operator
IN	201617001000		07/18/2014	BILLING OF RELAYED DEVICE
JP	2016-527127	6216452	07/18/2014	Charging Capillary Network Devices who have no relationship with the gateway or network operator
JP	2017-182030	6535064	07/18/2014	BILLING OF RELAYED DEVICE
JP	2019-101753	6696033	07/18/2014	BILLING OF RELAYED DEVICE
KR	10-2016-7004116	10-1776541	07/18/2014	BILLING OF RELAYED DEVICE
KR	10-2017-7024522	10-2054566	07/18/2014	BILLING OF RELAYED DEVICE
KR	10-2019-7035710	10-2123939	07/18/2014	BILLING OF RELAYED DEVICE
US	14/335,096	10813002	07/18/2014	Capillary Device Charging
US	17/024,898	US-2021-0007001	07/18/2014	Capillary Device Charging
US	61/847,671		07/18/2013	Charging Capillary Network Devices who have no relationship with the gateway or network operator
WO	PCT/US14/47201	WO2015/010023	07/18/2014	Charging Capillary Network Devices who have no relationship with the gateway or network operator
CN	201480044225.5	ZL201480044225.5	07/08/2014	CONNECTING IMSI-LESS DEVICES TO THE EPC
CN	201910724241.3	ZL201910724241.3	07/08/2014	CONNECTING IMSI-LESS DEVICES TO THE EPC
EP	14747199.9	3020215	07/08/2014	Connecting imsi-less devices to the epc

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Country	Application No.	Patent or Publication No.	Filing Date	Title
EP	20161651.3	EP3687194	07/08/2014	Connecting IMSI-less Devices to the EPC
JP	2016-525423	6113921	07/08/2014	Allowing SIM-less devices to connect to the EPC via a WLAN so that charging the device traffic can be charged to the access point owner or the service provider
JP	2017-049910	6360934	07/08/2014	Allowing SIM-less devices to connect to the EPC via a WLAN so that charging the device traffic can be charged to the access point owner or the service provider
KR	10-2016-7003100	10-1763271	07/08/2014	CONNECTING IMSI-LESS DEVICES TO THE EPC
KR	10-2017-7020835	10-2021679	07/08/2014	CONNECTING IMSI-LESS DEVICES TO THE EPC
US	14/901,888	9,930,613	07/08/2014	CONNECTING IMSI-LESS DEVICES TO THE EPC
US	15/892,454	10812461	07/08/2014	CONNECTING IMSI-LESS DEVICES TO THE EPC
US	17/017,933	US-2020-0412706	07/08/2014	CONNECTING IMSI-LESS DEVICES TO THE EPC
US	61/843,520		07/08/2013	Allowing SIM-less devices to connect to the EPC via a WLAN so that charging the device traffic can be charged to the access point owner or the service provider
WO	PCT/US14/45733	WO2015/006316	07/08/2014	Allowing SIM-less devices to connect to the EPC via a WLAN so that charging the device traffic can be charged to the access point owner or the service provider
US	61/837,993		06/21/2013	FRAME STRUCTURE AND FORMAT FOR PEER-TO-PEER COMMUNICATIONS
CN	201480041365.7	ZL201480041365.7	06/20/2014	Context Management
DE	14741459.3	60 2014 070 988.5	06/20/2014	CONTEXT MANAGEMENT
GB	14741459.3	3011724	06/20/2014	CONTEXT MANAGEMENT
IN	11630/DELNP/2015	374036	06/20/2014	Context Management
JP	2016-521854	6348583	06/20/2014	Context Management
JP	2018-104801	2018-139450	06/20/2014	Context Management
KR	10-2016-7001536	10-2016-0021869	06/20/2014	Context Management
KR	10-2017-7036618	10-2090657	06/20/2014	Context Management
US	14/310,620	10,230,790	06/20/2014	Context Management
US	61/837,845		06/21/2013	Context Management
WO	PCT/US14/43449	WO2014/205370	06/20/2014	Context Management
EP	14741459.3	3011724	06/20/2014	CONTEXT MANAGEMENT
CN	201480041387.3	ZL201480041387.3	06/20/2014	CROSS-LAYER AND CROSS-APPLICATION ACKNOWLEDGMENT FOR DATA TRANSMISSION
CN	201910221964.1		06/20/2014	CROSS-LAYER AND CROSS-APPLICATION ACKNOWLEDGMENT FOR DATA TRANSMISSION
DE	14741460.1	60 2014 066 680.9	06/20/2014	Cross-layer and cross-application acknowledgment for data transmission



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<b>Country</b>	<b>Application No.</b>	<b>Patent or Publication No.</b>	<b>Filing Date</b>	<b>Title</b>
EP	14741460.1	3011698	06/20/2014	Cross-layer and cross-application acknowledgment for data transmission
FR	14741460.1	3011698	06/20/2014	Cross-layer and cross-application acknowledgment for data transmission
GB	14741460.1	3011698	06/20/2014	Cross-layer and cross-application acknowledgment for data transmission
IN	11631/DELNP/2015		06/20/2014	CROSS-LAYER AND CROSS-APPLICATION ACKNOWLEDGMENT FOR DATA TRANSMISSION
JP	2016-521857	6259514	06/20/2014	Methods of Cross-Layer and Cross-Application Acknowledgement for Data Transmission in Proximity Communications
JP	2017-235999	2018-78589	06/20/2014	Methods of Cross-Layer and Cross-Application Acknowledgement for Data Transmission in Proximity Communications
KR	10-2016-7001435	10-1838412	06/20/2014	CROSS-LAYER AND CROSS-APPLICATION ACKNOWLEDGMENT FOR DATA TRANSMISSION
KR	10-2018-7006507		06/20/2014	CROSS-LAYER AND CROSS-APPLICATION ACKNOWLEDGMENT FOR DATA TRANSMISSION
US	14/310,772	9,496,989	06/20/2014	Methods of Cross-Layer and Cross-Application Acknowledgement for Data Transmission in Proximity Communications
US	15/348,688	9,979,511	06/20/2014	Cross-Layer And Cross-Application Acknowledgment For Data Transmission
US	15/964,921	10,425,194	06/20/2014	Cross-Layer And Cross-Application Acknowledgment For Data Transmission
US	61/837,746		06/21/2013	Methods of Cross-Layer and Cross-Application Acknowledgement for Data Transmission in Proximity Communications
WO	PCT/US14/43460	WO2014/205377	06/20/2014	Methods of Cross-Layer and Cross-Application Acknowledgement for Data Transmission in Proximity Communications
CN	201480046810.9	CN105612732A	07/10/2014	CONTEXT-AWARE PROXIMITY SERVICES
DE	14747458.9	602014069993.6	07/10/2014	Context-aware System Architecture for Peer-to-Peer Communications in Proximity
FR	14747458.9	3020182	07/10/2014	Context-aware System Architecture for Peer-to-Peer Communications in Proximity
GB	14747458.9	3020182	07/10/2014	Context-aware System Architecture for Peer-to-Peer Communications in Proximity
IN	201617000999		07/10/2014	Context-aware System Architecture for Peer-to-Peer Communications in Proximity
JP	2016-525488	6285549	07/10/2014	Context-aware System Architecture for Peer-to-Peer Communications in Proximity

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Country	Application No.	Patent or Publication No.	Filing Date	Title
JP	2018-016607	6511551	07/10/2014	Context-aware System Architecture for Peer-to-Peer Communications in Proximity
KR	10-2016-7003147	10-2016-0030970	07/10/2014	Context-aware System Architecture for Peer-to-Peer Communications in Proximity
KR	10-2017-7036641	10-1975365	07/10/2014	CONTEXT-AWARE PROXIMITY SERVICES
US	14/328,276	10791171	07/10/2014	CONTEXT-AWARE PROXIMITY SERVICES
US	61/844,689		07/10/2013	Context-aware System Architecture for Peer-to-Peer Communications in Proximity
WO	PCT/US14/46193	WO2015/006585	07/10/2014	Context-aware System Architecture for Peer-to-Peer Communications in Proximity
EP	14747458.9	3020182	07/10/2014	Context-aware System Architecture for Peer-to-Peer Communications in Proximity
CN	201480044436.9	CN105557047A	07/11/2014	Peer-to-Peer Communications Enhancements
CN	201910221228.6	CN110072294A	07/11/2014	Peer-to-Peer Communications Enhancements
EP	14747221.1	3020241	07/11/2014	Peer-to-Peer Communications Enhancements
EP	19164584.5	3522676	07/11/2014	Peer-to-Peer Communications Enhancements
IN	201617000998		07/11/2014	Peer-to-Peer Communications Enhancements
JP	2016-525801	6267331	07/11/2014	Peer-to-Peer Communications Enhancements
JP	2017-245007	6522098	07/11/2014	PEER-TO-PEER COMMUNICATIONS ENHANCEMENTS
KR	10-2016-7003399	10-1895032	07/11/2014	Peer-to-Peer Communications Enhancements
KR	10-2018-7025010		07/11/2014	Peer-to-Peer Communications Enhancements
US	14/328,908	10,045,373	07/11/2014	Peer-to-Peer Communications Enhancements
US	16/026,330	10638510	07/11/2014	Peer-to-Peer Communications Enhancements
US	61/845,688		07/12/2013	Peer-to-Peer Communications Enhancements
WO	PCT/US14/46313	WO2015/006672	07/11/2014	Peer-to-Peer Communications Enhancements
CN	201480047074.9	ZL201480047074.9	07/25/2014	SERVICE LAYER SOUTHBOUND INTERFACE AND QUALITY OF SERVICE
CN	201910275327.2	CN110099370A	07/25/2014	SERVICE LAYER SOUTHBOUND INTERFACE AND QUALITY OF SERVICE
EP	14750889.9	3025524	07/25/2014	SERVICE LAYER SOUTHBOUND INTERFACE AND QUALITY OF SERVICE
IN	201617003321	58105	07/25/2014	SERVICE LAYER SOUTHBOUND INTERFACE AND QUALITY OF SERVICE
JP	2016-530074	2016-531489	07/25/2014	SERVICE LAYER SOUTHBOUND INTERFACE AND QUALITY OF SERVICE
JP	2018-140331	6568270	07/25/2014	SERVICE LAYER SOUTHBOUND INTERFACE AND QUALITY OF SERVICE

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Country	Application No.	Patent or Publication No.	Filing Date	Title
KR	10-2016-7004579	10-1868070	07/25/2014	SERVICE LAYER SOUTHBOUND INTERFACE AND QUALITY OF SERVICE
KR	10-2018-7016367	10-2069141	07/25/2014	SERVICE LAYER SOUTHBOUND INTERFACE AND QUALITY OF SERVICE
US	14/341,343	9,621,470	07/25/2014	SERVICE LAYER SOUTHBOUND INTERFACE AND QUALITY OF SERVICE
US	15/467,046	10,616,120	07/25/2014	SERVICE LAYER SOUTHBOUND INTERFACE AND QUALITY OF SERVICE
US	61/858,386		07/25/2013	SERVICE LAYER SOUTHBOUND INTERFACE AND QUALITY OF SERVICE
WO	PCT/US14/48214	WO2015/013627	07/25/2014	SERVICE LAYER SOUTHBOUND INTERFACE AND QUALITY OF SERVICE
CN	201480056856.9	CN105659668A	09/12/2014	MOBILE NETWORK OPERATOR CONTROL OF WLAN QOS VIA ANDSF
DE	14780929.7	602014059355.0	09/12/2014	Mobile network operator control of wlan qos via andsf
EP	14780929.7	3044996	09/12/2014	Mobile network operator control of wlan qos via andsf
GB	14780929.7	3044996	09/12/2014	Mobile network operator control of wlan qos via andsf
JP	2016-542820	6345789	09/12/2014	MOBILE NETWORK OPERATOR CONTROL OF WLAN QOS VIA ANDSF
KR	10-2016-7009394	10-1790907	09/12/2014	MOBILE NETWORK OPERATOR CONTROL OF WLAN QOS VIA ANDSF
KR	10-2017-7030175		09/12/2014	Mobile Network Operator (MNO) Control of WiFi QoS via ANDSF Extensions
US	14/917,600	9,794,857	09/12/2014	MOBILE NETWORK OPERATOR CONTROL OF WLAN QOS VIA ANDSF
US	15/729,202	11,019,555	09/12/2014	MOBILE NETWORK OPERATOR CONTROL OF WLAN QOS VIA ANDSF
US	61/877,576		09/13/2013	Mobile Network Operator (MNO) Control of WiFi QoS via ANDSF Extensions
WO	PCT/US14/55421	WO2015/038911	09/12/2014	Mobile Network Operator (MNO) Control of WiFi QoS via ANDSF Extensions
CN	201480056544.8	ZL201480056544.8	09/16/2014	MOBILE NETWORK OPERATOR (MNO) CONTROL OF WIFI QOS VIA EAP/DIAMETER
CN	201910436792.X	CN110113754A	09/16/2014	MOBILE NETWORK OPERATOR (MNO) CONTROL OF WIFI QOS VIA EAP/DIAMETER
EP	14780956.0	3047625	09/16/2014	MOBILE NETWORK OPERATOR (MNO) CONTROL OF WIFI QOS VIA EAP/DIAMETER
EP	20180382.2	3739841	09/16/2014	MNO Control of WiFi QoS via EAP/Diameter Extension
JP	2016-542871	6229065	09/16/2014	Mobile Network Operator (MNO) Control of WiFi QoS via EAP and Diameter Extensions

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Country	Application No.	Patent or Publication No.	Filing Date	Title
JP	2017-200406	6473209	09/16/2014	Mobile Network Operator (MNO) Control of WiFi QoS via EAP and Diameter Extensions
JP	2019-010306	6696012	09/16/2014	TWAN SERVER, METHOD AND USER EQUIPMENT
KR	10-2016-7009657	10-1861216	09/16/2014	MOBILE NETWORK OPERATOR (MNO) CONTROL OF WIFI QOS VIA EAP/DIAMETER
KR	10-2018-7014173	10-2064099	09/16/2014	MOBILE NETWORK OPERATOR (MNO) CONTROL OF WIFI QOS VIA EAP/DIAMETER
US	15/022,081	10,085,179	09/16/2014	MOBILE NETWORK OPERATOR (MNO) CONTROL OF WIFI QOS VIA EAP/DIAMETER
US	16/109,052	10805842	09/16/2014	MOBILE NETWORK OPERATOR (MNO) CONTROL OF WIFI QOS VIA EAP/DIAMETER
US	17/015,454	US-2020-0404548	09/16/2014	MOBILE NETWORK OPERATOR (MNO) CONTROL OF WIFI QOS VIA EAP/DIAMETER
US	61/878,260		09/16/2013	Mobile Network Operator (MNO) Control of WiFi QoS via EAP and Diameter Extensions
WO	PCT/US14/55859	WO2015/039096	09/16/2014	Mobile Network Operator (MNO) Control of WiFi QoS via EAP and Diameter Extensions
CN	201480057937.0	ZL201480057937.0	09/19/2014	MOBILE NETWORK OPERATOR (MNO) CONTROL OF WIFI QOS BASED ON TRAFFIC DETECTION AND DSCP MAPPING IN TRUSTED WLAN ACCESS AND NETWORKS
EP	14780999.0	3047699	09/19/2014	MOBILE NETWORK OPERATOR (MNO) CONTROL OF WIFI QOS BASED ON TRAFFIC DETECTION AND DSCP MAPPING IN TRUSTED WLAN ACCESS AND NETWORKS
EP	19205574.7		09/19/2014	MNO Control of WiFi QoS via TDF and DSCP in TWAN
JP	2016-515367	6258472	09/19/2014	Mobile Network Operator (MNO) Control of WiFi QoS based on Traffic Detection and DSCP Mapping in Trusted WLAN Access and Networks
JP	2017-234380	2018-38089	09/19/2014	Mobile Network Operator (MNO) Control of WiFi QoS based on Traffic Detection and DSCP Mapping in Trusted WLAN Access and Networks
KR	10-2016-7010217	10-1772598	09/19/2014	MOBILE NETWORK OPERATOR(MNO) CONTROL OF WIFI QOS BASED ON TRAFFIC DETECTION AND DSCP MAPPING IN TRUSTED WLAN ACCESS AND NETWORKS
US	15/022,939	10,645,014	09/19/2014	Mobile Network Operator (MNO) Control of WiFi QoS based on Traffic Detection and DSCP Mapping in Trusted WLAN Access AND NETWORKS
US	61/880,421		09/20/2013	Mobile Network Operator (MNO) Control of WiFi QoS based on Traffic Detection and DSCP Mapping in Trusted WLAN Access Networks

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Country	Application No.	Patent or Publication No.	Filing Date	Title
WO	PCT/US14/56544	WO2015/042389	09/19/2014	Mobile Network Operator (MNO) Control of WiFi QoS based on Traffic Detection and DSCP Mapping in Trusted WLAN Access Networks
CN	201580014844.4	CN106105382A	02/19/2015	SERVING GATEWAY EXTENSIONS FOR INTER-SYSTEM MOBILITY
CN	202110154470.3	CN113194511A	02/19/2015	SGW Extensions for ISWN Mobility Enhancement
EP	15709786.6	3108688	02/19/2015	Serving Gateway (SGW) Extensions for Inter-system Mobility in Integrated Small Cell and WiFi (ISW) Networks
EP	21187061.3	3917212	02/19/2015	SGW Extensions for ISWN Mobility Enhancement
JP	2016-552993	6441951	02/19/2015	SERVING GATEWAY EXTENSIONS FOR INTER-SYSTEM MOBILITY
JP	2018-168631	6689336	02/19/2015	SERVING GATEWAY EXTENSIONS FOR INTER-SYSTEM MOBILITY
KR	10-2016-7025305	10-1868886	02/19/2015	SERVING GATEWAY EXTENSIONS FOR INTER-SYSTEM MOBILITY
KR	10-2018-7016677	10-2131233	02/19/2015	Serving Gateway (SGW) Extensions for Inter-system Mobility in Integrated Small Cell and WiFi (ISW) Networks
US	15/119,920	11,146,956	02/19/2015	SERVING GATEWAY EXTENSIONS FOR INTER-SYSTEM MOBILITY
US	17/472,122	US-2021-0409948	02/19/2015	SERVING GATEWAY EXTENSIONS FOR INTER-SYSTEM MOBILITY
US	61/941,600		02/19/2014	Serving Gateway (SGW) Extensions for Inter-system Mobility in Integrated Small Cell and WiFi (ISW) Networks
WO	PCT/US15/16481	WO2015/126999	02/19/2015	Serving Gateway (SGW) Extensions for Inter-system Mobility in Integrated Small Cell and WiFi (ISW) Networks
CN	201580057963.8	ZL201580057963.8	09/30/2015	DYNAMIC POLICY CONTROL
DE	15782143.0	60 2015 048 658.7	09/30/2015	DYNAMIC POLICY CONTROL
EP	15782143.0	3202089	09/30/2015	DYNAMIC POLICY CONTROL
FR	15782143.0	3202089	09/30/2015	DYNAMIC POLICY CONTROL
GB	15782143.0	3202089	09/30/2015	DYNAMIC POLICY CONTROL
JP	2017-517039	6600682	09/30/2015	DYNAMIC POLICY CONTROL
KR	10-2017-7011421	10-1964245	09/30/2015	DYNAMIC POLICY CONTROL
KR	10-2019-7008692	10-2319300	09/30/2015	DYNAMIC POLICY CONTROL
US	15/514,194	US2017/0295103	09/30/2015	DYNAMIC POLICY CONTROL
US	62/057,529		09/30/2014	Management Plane Architecture for Dynamic Management and Control of Integrated Small Cell / Wi-Fi Networks
WO	PCT/US15/53175	WO2016/054179	09/30/2015	DYNAMIC POLICY CONTROL
CN	201580015356.5	CN106134251A	02/20/2015	Handover in Integrated Small Cell and WiFi Networks

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
EP	15709791.6	3108689	02/20/2015	Handover in Integrated Small Cell and WiFi Networks
IN	201617029171	1552	02/20/2015	Handover in Integrated Small Cell and WiFi Networks
JP	2016-553401	2017-510176	02/20/2015	Handover in Integrated Small Cell and WiFi Networks
JP	2018-105034	6501436	02/20/2015	Handover in Integrated Small Cell and WiFi Networks
JP	2019-050512	6801033	02/20/2015	HANDOVER IN INTEGRATED SMALL CELL AND WIFI NETWORKS
KR	10-2016-7025843	10-1870624	02/20/2015	Handover in Integrated Small Cell and WiFi Networks
KR	10-2018-7017205	10-2010323	02/20/2015	Handover in Integrated Small Cell and WiFi Networks
US	15/119,903	US-2017-0070923	02/20/2015	Handover in Integrated Small Cell and WiFi Networks
US	61/942,900		02/21/2014	Handover in Integrated Small Cell and WiFi Networks
WO	PCT/US15/16867	WO2015/127241	02/20/2015	Handover in Integrated Small Cell and WiFi Networks
CN	201580042275.4	ZL.201580042275.4	07/02/2015	Application Data Delivery Service for Networks Supporting Multiple Transport Mechanisms
CN	202110216586.5	CN 113038395 A	07/02/2015	APPLICATION DATA DELIVERY SERVICE FOR NETWORKS SUPPORTING MULTIPLE TRANSPORT MECHANISMS
DE	15739427.1	60 2015 042 508.1	07/02/2015	Application Data Delivery Service for Networks Supporting Multiple Transport Mechanisms
DE	19203343.9	60 2015 075 723.8	07/02/2015	APPLICATION DATA DELIVERY SERVICE FOR NETWORKS SUPPORTING MULTIPLE TRANSPORT MECHANISMS
EP	15739427.1	3165008	07/02/2015	Application Data Delivery Service for Networks Supporting Multiple Transport Mechanisms
EP	19203343.9	3621329	07/02/2015	APPLICATION DATA DELIVERY SERVICE FOR NETWORKS SUPPORTING MULTIPLE TRANSPORT MECHANISMS
FR	15739427.1	3165008	07/02/2015	Application Data Delivery Service for Networks Supporting Multiple Transport Mechanisms
FR	19203343.9	3621329	07/02/2015	APPLICATION DATA DELIVERY SERVICE FOR NETWORKS SUPPORTING MULTIPLE TRANSPORT MECHANISMS
GB	15739427.1	3165008	07/02/2015	Application Data Delivery Service for Networks Supporting Multiple Transport Mechanisms
GB	19203343.9	3621329	07/02/2015	APPLICATION DATA DELIVERY SERVICE FOR NETWORKS SUPPORTING MULTIPLE TRANSPORT MECHANISMS
IT	15739427.1	502020000002764	07/02/2015	Application Data Delivery Service for Networks Supporting Multiple Transport Mechanisms
JP	2017-521044	6434618	07/02/2015	Application Data Delivery Service for Networks Supporting Multiple Transport Mechanisms

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
JP	2018-210620	6588144	07/02/2015	Application Data Delivery Service for Networks Supporting Multiple Transport Mechanisms
KR	10-2017-7002705	10-1824850	07/02/2015	Application Data Delivery Service for Networks Supporting Multiple Transport Mechanisms
KR	10-2018-7002485	10-2224447	07/02/2015	Application Data Delivery Service for Networks Supporting Multiple Transport Mechanisms
NL	15739427.1	3165008	07/02/2015	Application Data Delivery Service for Networks Supporting Multiple Transport Mechanisms
NL	19203343.9	3621329	07/02/2015	APPLICATION DATA DELIVERY SERVICE FOR NETWORKS SUPPORTING MULTIPLE TRANSPORT MECHANISMS
US	15/322,873	US2017/0150332	07/02/2015	Application Data Delivery Service for Networks Supporting Multiple Transport Mechanisms
US	16/050,078	10,602,322	07/02/2015	Application Data Delivery Service for Networks Supporting Multiple Transport Mechanisms
US	16/788,727	10,993,089	07/02/2015	Application Data Delivery Service for Networks Supporting Multiple Transport Mechanisms
US	17/220,084	US-2021-0250736	07/02/2015	Application Data Delivery Service for Networks Supporting Multiple Transport Mechanisms
US	62/020,639		07/03/2014	Application Data Delivery Service for interfacing MTC Application Servers, such as Service Capability Servers, with the 3GPP core network and MTC Device Applications
WO	PCT/US15/38978	WO2016/004301	07/02/2015	Application Data Delivery Service for Networks Supporting Multiple Transport Mechanisms
DE	15712754.9	602015048113.5	03/11/2015	Multi-Hop Peer-to-Peer Communications
EP	15712754.9	3117679	03/11/2015	Multi-Hop Peer-to-Peer Communications
GB	15712754.9	3117679	03/11/2015	Multi-Hop Peer-to-Peer Communications
US	14/644,777	9,762,362	03/11/2015	Multi-Hop Peer-To-Peer Communications
US	61/951,261		03/11/2014	Methods of Multi-Hop Frame Formation for Peer-to-Peer Communications
WO	PCT/US15/19919	WO2015/138585	03/11/2015	Multi-Hop Peer-to-Peer Communications
CN	201580040906.9	ZL201580040906.9	06/23/2015	INTER-SYSTEM MOBILITY IN INTEGRATED WIRELESS NETWORKS
CN	202010221628.X	CN 111405558 A	06/23/2015	TWAN-MME-SGW Extensions for Enhanced ISWN Mobility
DE	15738188.0	60 2015 058 367.1	06/23/2015	INTER-SYSTEM MOBILITY IN INTEGRATED WIRELESS NETWORKS
EP	15738188.0	3158783	06/23/2015	INTER-SYSTEM MOBILITY IN INTEGRATED WIRELESS NETWORKS

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<b>Country</b>	<b>Application No.</b>	<b>Patent or Publication No.</b>	<b>Filing Date</b>	<b>Title</b>
EP	20183810.9	3742802	06/23/2015	TWAN-MME-SGW Extensions for Enhanced ISWN Mobility
FR	15738188.0	3158783	06/23/2015	INTER-SYSTEM MOBILITY IN INTEGRATED WIRELESS NETWORKS
GB	15738188.0	3158783	06/23/2015	INTER-SYSTEM MOBILITY IN INTEGRATED WIRELESS NETWORKS
JP	2016-574422	2017-523689	06/23/2015	INTER-SYSTEM MOBILITY IN INTEGRATED WIRELESS NETWORKS
JP	2018-086695	6496861	06/23/2015	INTER-SYSTEM MOBILITY IN INTEGRATED WIRELESS NETWORKS
KR	10-2017-7001904	10-1835532	06/23/2015	INTER-SYSTEM MOBILITY IN INTEGRATED WIRELESS NETWORKS
KR	10-2018-7005782	10-2318735	06/23/2015	INTER-SYSTEM MOBILITY IN INTEGRATED WIRELESS NETWORKS
US	15/321,365	US2017/0195930	06/23/2015	INTER-SYSTEM MOBILITY IN INTEGRATED WIRELESS NETWORKS
US	16/801,783	US-2020-0196212	06/23/2015	INTER-SYSTEM MOBILITY IN INTEGRATED WIRELESS NETWORKS
US	62/015,763		06/23/2014	TWAN, MME and SGW Extensions for Inter-System Mobility Enhancements in Integrated Small Cell and WiFi Networks
WO	PCT/US15/37186	WO2015/200326	06/23/2015	INTER-SYSTEM MOBILITY IN INTEGRATED WIRELESS NETWORKS
CN	201580042465.6	ZL201580042465.6	07/07/2015	Coordinated Grouping for Machine Type Communications Group Based Services
CN	202010198917.2	CN 111405493 A	07/07/2015	SCS / EPC Coordinated Group Formation
EP	15739152.5	3167630	07/07/2015	Coordinated Grouping for Machine Type Communications Group Based Services
IN	201717000385	10242	07/07/2015	Coordinated Grouping for Machine Type Communications Group Based Services
JP	2017-500366	6393398	07/07/2015	Coordinated Grouping for Machine Type Communications Group Based Services
JP	2018-157228	6619067	07/07/2015	Coordinated Grouping for Machine Type Communications Group Based Services
KR	10-2017-7003011		07/07/2015	Coordinated Grouping for Machine Type Communications Group Based Services
KR	10-2018-7018340	10-2167870	07/07/2015	Coordinated Grouping for Machine Type Communications Group Based Services
US	14/793,072	10,136,284	07/07/2015	Coordinated Grouping For Machine Type Communications Group Based Services



## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
US	16/157,247	10,382,926	07/07/2015	Coordinated Grouping For Machine Type Communications Group Based Services
US	16/511,199	10631149	07/07/2015	Coordinated Grouping For Machine Type Communications Group Based Services
US	62/021,369		07/07/2014	SCS / EPC Coordinated Group Formation for more efficient utilization of EPC resource and group based features such as broadcasting, charging, and triggering.
WO	PCT/US15/39354	WO2016/007494	07/07/2015	Coordinated Grouping for Machine Type Communications Group Based Services
EP	15723375.0	3138345	04/30/2015	Apparatus and Method of Using Time Reuse Frame Structures for Multi-Hop Communications
US	14/701,329	10,136,425	04/30/2015	APPARATUS AND METHOD OF USING TIME REUSE FRAME STRUCTURES FOR MULTI-HOP COMMUNICATIONS
US	61/987,945		05/02/2014	Apparatus of Time Reuse Frame Structure for Multi-Hop Communications
WO	PCT/US15/28553	WO2015/168428	04/30/2015	Apparatus and Method of Using Time Reuse Frame Structures for Multi-Hop Communications
CN	201480037441.7	CN105432102A	05/22/2014	NETWORK ASSISTED BOOTSTRAPPING FOR MACHINE-TO-MACHINE COMMUNICATION
CN	201910079015.4	ZL 201910079015.4	05/22/2014	NETWORK ASSISTED BOOTSTRAPPING FOR MACHINE-TO-MACHINE COMMUNICATION
DE	14731894.3	60 2014 080 640.6	05/22/2014	NETWORK ASSISTED BOOTSTRAPPING FOR MACHINE-TO-MACHINE COMMUNICATION
EP	14731894.3	3000248	05/22/2014	NETWORK ASSISTED BOOTSTRAPPING FOR MACHINE-TO-MACHINE COMMUNICATION
EP	21199991.7	3952376	05/22/2014	Access Network Assisted Bootstrapping
GB	14731894.3	3000248	05/22/2014	NETWORK ASSISTED BOOTSTRAPPING FOR MACHINE-TO-MACHINE COMMUNICATION
IN	11378/DELNP/2015		05/22/2014	NETWORK ASSISTED BOOTSTRAPPING FOR MACHINE-TO-MACHINE COMMUNICATION
JP	2016-515095	6216868	05/22/2014	NETWORK ASSISTED BOOTSTRAPPING FOR MACHINE-TO-MACHINE COMMUNICATION
JP	2017-183773	2018-26841	05/22/2014	NETWORK ASSISTED BOOTSTRAPPING FOR MACHINE-TO-MACHINE COMMUNICATION
JP	2018-207326		05/22/2014	NETWORK ASSISTED BOOTSTRAPPING FOR MACHINE-TO-MACHINE COMMUNICATION
JP	2020-081241		05/22/2014	NETWORK ASSISTED BOOTSTRAPPING FOR MACHINE-TO-MACHINE COMMUNICATION
KR	10-2015-7036120	10-1847255	05/22/2014	NETWORK ASSISTED BOOTSTRAPPING FOR MACHINE-TO-MACHINE COMMUNICATION

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
KR	10-2018-7009288		05/22/2014	NETWORK ASSISTED BOOTSTRAPPING FOR MACHINE-TO-MACHINE COMMUNICATION
KR	10-2020-7012390	10-2224559	05/22/2014	NETWORK ASSISTED BOOTSTRAPPING FOR MACHINE-TO-MACHINE COMMUNICATION
US	14/285,397	9,344,888	05/22/2014	Access Network Assisted Procedures and Messaging for Service Layer Bootstrapping, including enhancements to GBA, EAP and PANA bootstrapping methods
US	15/135,100	9,614,846	05/22/2014	Machine to Machine Network Assisted Bootstrapping
US	15/476,022	9,923,895	05/22/2014	MACHINE-TO-MACHINE NETWORK ASSISTED BOOTSTRAPPING
US	15/920,595	10,348,728	05/22/2014	MACHINE-TO-MACHINE NETWORK ASSISTED BOOTSTRAPPING
US	16/425,126	2019/0281054	05/22/2014	MACHINE-TO-MACHINE NETWORK ASSISTED BOOTSTRAPPING
WO	PCT/US14/39205	WO2014/190186	05/22/2014	NETWORK ASSISTED BOOTSTRAPPING FOR MACHINE-TO-MACHINE COMMUNICATION
US	62/024,287		07/14/2014	Handover in Integrated Small Cell and WiFi Networks (Updated SWw Protocol Stack for WLAN AP/UE)
CN	201580058187.3	201580058187.3	09/28/2015	SERVICE CAPABILITY SERVER/EPC COORDINATION FOR POWER SAVINGS MODE AND PAGING
CN	202010472359.4	CN111586647A	09/28/2015	Procedures for coordinating a UE's PSM mode configuration between the UE, Core Network, and SCS.
DE	15778505.6	60 2015 045 218.6	09/28/2015	SERVICE CAPABILITY SERVER/EPC COORDINATION FOR POWER SAVINGS MODE AND PAGING
EP	15778505.6	3202189	09/28/2015	SERVICE CAPABILITY SERVER/EPC COORDINATION FOR POWER SAVINGS MODE AND PAGING
EP	19217613.9	3657866	09/28/2015	Procedures for coordinating a UE's PSM mode configuration between the UE, Core Network, and SCS.
FR	15778505.6	3202189	09/28/2015	SERVICE CAPABILITY SERVER/EPC COORDINATION FOR POWER SAVINGS MODE AND PAGING
GB	15778505.6	3202189	09/28/2015	SERVICE CAPABILITY SERVER/EPC COORDINATION FOR POWER SAVINGS MODE AND PAGING
IN	201717011789	38/2017	09/28/2015	SERVICE CAPABILITY SERVER/EPC COORDINATION FOR POWER SAVINGS MODE AND PAGING
JP	2017-516857	6510038	09/28/2015	SERVICE CAPABILITY SERVER/EPC COORDINATION FOR POWER SAVINGS MODE AND PAGING
KR	10-2017-7011623		09/28/2015	SERVICE CAPABILITY SERVER/EPC COORDINATION FOR POWER SAVINGS MODE AND PAGING
KR	10-2019-7006422	10-2069755	09/28/2015	SERVICE CAPABILITY SERVER/EPC COORDINATION FOR POWER SAVINGS MODE AND PAGING

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
US	14/867,359	10,602,441	09/28/2015	SERVICE CAPABILITY SERVER/EPC COORDINATION FOR POWER SAVINGS MODE AND PAGING
US	16/795,818	11,019,566	09/28/2015	SERVICE CAPABILITY SERVER/EPC COORDINATION FOR POWER SAVINGS MODE AND PAGING
US	17/242,413	US-2021-0250857	09/28/2015	SERVICE CAPABILITY SERVER/EPC COORDINATION FOR POWER SAVINGS MODE AND PAGING
US	62/056,924		09/29/2014	Procedures for coordinating a UE's PSM mode configuration between the UE, Core Network, and SCS.
WO	PCT/US15/52594	WO2016/053846	09/28/2015	SERVICE CAPABILITY SERVER/EPC COORDINATION FOR POWER SAVINGS MODE AND PAGING
CN	201580073340	201580073340	12/11/2015	Charging in the Integrated Small Cell/Wi-Fi Networks (ISWN)
DE	15819986.9	602015058902.5	12/11/2015	Charging in the integrated small cell/wi-fi networks (iswn)
EP	15819986.9	3231167	12/11/2015	Charging in the integrated small cell/wi-fi networks (iswn)
FR	15819986.9	3231167	12/11/2015	Charging in the integrated small cell/wi-fi networks (iswn)
GB	15819986.9	3231167	12/11/2015	Charging in the integrated small cell/wi-fi networks (iswn)
JP	2017-531322	6541787	12/11/2015	CHARGING IN THE INTEGRATED SMALL CELL/WI-FI NETWORKS (ISWN)
KR	10-2017-7018926	10-2044615	12/11/2015	CHARGING IN THE INTEGRATED SMALL CELL/WI-FI NETWORKS (ISWN)
US	15/534,060	11,019,221	12/11/2015	CHARGING IN THE INTEGRATED SMALL CELL/WI-FI NETWORKS (ISWN)
US	62/091,111		12/12/2014	Charging in the Integrated Small Cell / WiFi Network
WO	PCT/US15/65262	WO2016/094805	12/11/2015	CHARGING IN THE INTEGRATED SMALL CELL/WI-FI NETWORKS (ISWN)
CN	201680029667.1	ZL201680029667.1	04/22/2016	Small Data Usage Enablement in 3GPP Networks
CN	202010684942.1	CN111741451A	04/22/2016	Small Data Usage Enablement in 3GPP Networks
DE	16720296.9	60 2016 054 387.7	04/22/2016	Small Data Usage Enablement in 3GPP Networks
EP	16720296.9	3286935	04/22/2016	Small Data Usage Enablement in 3GPP Networks
EP	21153096.9	3836589	04/22/2016	Small Data Usage Enablement in 3GPP Networks
FR	16720296.9	3286935	04/22/2016	Small Data Usage Enablement in 3GPP Networks
GB	16720296.9	3286935	04/22/2016	Small Data Usage Enablement in 3GPP Networks
IN	201717039107	50/2017	04/22/2016	Small Data Usage Enablement in 3GPP Networks
JP	2017-554824	6677747	04/22/2016	Small Data Usage Enablement in 3GPP Networks
JP	2020-044771		04/22/2016	Small Data Usage Enablement in 3GPP Networks
KR	10-2017-7033532	10-1995150	04/22/2016	Small Data Usage Enablement in 3GPP Networks
KR	10-2019-7018157		04/22/2016	Small Data Usage Enablement in 3GPP Networks

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
US	15/568,236	10,412,775	04/22/2016	Small Data Usage Enablement in 3GPP Networks
US	16/527,587	11,083,033	04/22/2016	Small Data Usage Enablement in 3GPP Networks
US	17/354,017	US-2021-0315037	04/22/2016	Small Data Usage Enablement in 3GPP Networks
US	62/151,088		04/22/2015	Small Data Usage Enablement in 3GPP Networks
WO	PCT/US16/28905	WO2016/172521	04/22/2016	Small Data Usage Enablement in 3GPP Networks
CN	201680025505.0	ZL.201680025505.0	04/01/2016	Managing MBMS Membership at the Service Capability Exposure Function
EP	16717029.9	3278541	04/01/2016	MANAGING MBMS MEMBERSHIP AT THE SERVICE CAPABILITY EXPOSURE FUNCTION
JP	2017-551313	2018-515007	04/01/2016	Managing MBMS Membership at the Service Capability Exposure Function
JP	2019-180189	6829295	04/01/2016	Managing MBMS Membership at the Service Capability Exposure Function
KR	10-2017-7031796	10-2131761	04/01/2016	Managing MBMS Membership at the Service Capability Exposure Function (SCEF)
US	15/562,564	10,517,138	04/01/2016	MANAGING MBMS MEMBERSHIP AT THE SERVICE CAPABILITY EXPOSURE FUNCTION
US	16/685,198	11,051,359	04/01/2016	Managing MBMS Membership at the Service Capability Exposure Function
US	62/142,156		04/02/2015	Managing MBMS Membership at the Service Capability Exposure Function (SCEF)
WO	PCT/US16/25487	WO2016/161242	04/01/2016	Managing MBMS Membership at the Service Capability Exposure Function (SCEF)
CN	201680051580.4	CN108029007A	07/29/2016	Notification and Trigger for Service Layers and Applications in a Small Cell Network
DE	16748457.5	60 2016 056 077.1	07/29/2016	Notification and Trigger for Service Layers and Applications in a Small Cell Network
EP	16748457.5	3329695	07/29/2016	Notification and Trigger for Service Layers and Applications in a Small Cell Network
FR	16748457.5	3329695	07/29/2016	Notification and Trigger for Service Layers and Applications in a Small Cell Network
GB	16748457.5	3329695	07/29/2016	Notification and Trigger for Service Layers and Applications in a Small Cell Network
JP	2018-504655	2018-528662	07/29/2016	Notification and Trigger for Service Layers and Applications in a Small Cell Network
KR	10-2018-7005983	10-2045691	07/29/2016	Notification and Trigger for Service Layers and Applications in a Small Cell Network
US	15/748,838	10757636	07/29/2016	Notification and Trigger for Service Layers and Applications in a Small Cell Network

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
US	62/199,559		07/31/2015	Notification and Trigger Procedures for Service Layers and Applications in the Small Cell Network
WO	PCT/US16/44701	WO2017/023748	07/29/2016	Notification and Trigger for Service Layers and Applications in a Small Cell Network
CN	201680050503.7	CN107925620A	07/29/2016	MTC Service Selection in the (S)Gi-LAN
EP	16748456.7	3329643	07/29/2016	MTC Service Selection in the (S)Gi-LAN
JP	2018-504789	6623279	07/29/2016	MTC Service Selection in the (S)Gi-LAN
KR	10-2018-7005436	10-2050181	07/29/2016	MTC Service Selection in the (S)Gi-LAN
US	15/748,829	10,965,588	07/29/2016	MTC Service Selection in the (S)Gi-LAN
US	17/181,812	US-2021-0176166	07/29/2016	MTC Service Selection in the (S)Gi-LAN
US	62/199,645		07/31/2015	MTC Service Selection in the (S)Gi-LAN
WO	PCT/US16/44686	WO2017/023741	07/29/2016	MTC Service Selection in the (S)Gi-LAN
US	15/762,576	10,624,016	09/23/2016	Aggregated Handover in Integrated Small Cell and WiFi Networks
US	16/815,232	11,228,959	09/23/2016	Aggregated Handover in Integrated Small Cell and WiFi Networks
US	62/222,391		09/23/2015	Aggregated Handover in Integrated Small Cell and WiFi Networks
WO	PCT/US16/53362	WO2017/053742	09/23/2016	Aggregated Handover in Integrated Small Cell and WiFi Networks
CN	201780038387.1	CN109315003A	05/17/2017	METHOD AND APPARATUS FOR INDICATING THAT CONNECTION ENABLES ROUTING OF DATA BETWEEN PDN GATEWAY AND LOCAL GATEWAY
JP	2018-560646	6738908	05/17/2017	METHOD AND APPARATUS FOR INDICATING THAT CONNECTION ENABLES ROUTING OF DATA BETWEEN PDN GATEWAY AND LOCAL GATEWAY
KR	10-2018-7036193	10-2162732	05/17/2017	METHOD AND APPARATUS FOR INDICATING THAT CONNECTION ENABLES ROUTING OF DATA BETWEEN PDN GATEWAY AND LOCAL GATEWAY
US	16/301,881	2019/0150225	05/17/2017	METHOD AND APPARATUS FOR INDICATING THAT CONNECTION ENABLES ROUTING OF DATA BETWEEN PDN GATEWAY AND LOCAL GATEWAY
US	62/337,504		05/17/2016	Enablement of Direct Connections between Local Servers and Service Capability Servers/ Application Servers over 3GPP Mobile Core Networks
WO	PCT/US17/33092	WO2017/201157	05/17/2017	METHOD AND APPARATUS FOR INDICATING THAT CONNECTION ENABLES ROUTING OF DATA BETWEEN PDN GATEWAY AND LOCAL GATEWAY
EP	17727444.6	3459316	05/17/2017	METHOD AND APPARATUS FOR INDICATING THAT CONNECTION ENABLES ROUTING OF DATA BETWEEN PDN GATEWAY AND LOCAL GATEWAY

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
CN	201780031291.2	CN 111052625 A	04/20/2017	DOWNLINK SYNCHRONIZATION
DE	17721260.2	602017047534.3	04/20/2017	DOWNLINK SYNCHRONIZATION
EP	17721260.2	3446415	04/20/2017	DOWNLINK SYNCHRONIZATION
FR	17721260.2	3446415	04/20/2017	DOWNLINK SYNCHRONIZATION
GB	17721260.2	3446415	04/20/2017	DOWNLINK SYNCHRONIZATION
IN	201817039978	WO 2017/184837	04/20/2017	DOWNLINK SYNCHRONIZATION
JP	2018-554708		04/20/2017	DOWNLINK SYNCHRONIZATION
JP	2020-198487		04/20/2017	Downlink Synchronization for 5G
KR	10-2018-7033173	10-2153077	04/20/2017	DOWNLINK SYNCHRONIZATION
KR	10-2020-7025268	10-2207045	04/20/2017	Downlink Synchronization for 5G
US	15/492,261	10,271,295	04/20/2017	DOWNLINK SYNCHRONIZATION
US	16/250,221	10791531	04/20/2017	DOWNLINK SYNCHRONIZATION
US	62/325,323		04/20/2016	Downlink Synchronization for 5G
WO	PCT/US17/028566	WO2017/184837	04/20/2017	DOWNLINK SYNCHRONIZATION
CN	201780031148.3	CN109964436A	04/20/2017	CONFIGURABLE REFERENCE SIGNALS
EP	17721267.7	3446432	04/20/2017	CONFIGURABLE REFERENCE SIGNALS
JP	2018-554758		04/20/2017	CONFIGURABLE REFERENCE SIGNALS
JP	2020-188143		04/20/2017	Enhanced CSI-RS Design for 5G 3D MIMO
KR	10-2018-7033561	10-2175608	04/20/2017	CONFIGURABLE REFERENCE SIGNALS
US	16/093,287	10812238	04/20/2017	CONFIGURABLE REFERENCE SIGNALS
US	17/019,489	11,218,267	04/20/2017	CONFIGURABLE REFERENCE SIGNALS
US	17/528,794		04/20/2017	CONFIGURABLE REFERENCE SIGNALS
US	62/325,394		04/20/2016	Enhanced CSI-RS Design for 5G 3D MIMO
WO	PCT/US17/028633	WO2017/184865	04/20/2017	CONFIGURABLE REFERENCE SIGNALS
CN	201780037931.0	ZL 201780037931.0	04/20/2017	PHYSICAL CHANNELS IN NEW RADIO
CN	202111184696.4		04/20/2017	UL HARQ and PHICH Design for TTIs with different Numerologies
EP	17720961.6	3446425	04/20/2017	PHYSICAL CHANNELS IN NEW RADIO
IN	201817040717		04/20/2017	PHYSICAL CHANNELS IN NEW RADIO
JP	2018-554707	6837492	04/20/2017	PHYSICAL CHANNELS IN NEW RADIO
KR	10-2018-7033458		04/20/2017	PHYSICAL CHANNELS IN NEW RADIO
US	15/492,779	10,432,362	04/20/2017	Physical Channels In New Radio
US	16/547,047	11,184,121	04/20/2017	Physical Channels In New Radio

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Country	Application No.	Patent or Publication No.	Filing Date	Title
US	62/325,335		04/20/2016	UL HARQ and PHICH Design for TTIs with different Numerologies
WO	PCT/US17/028596	WO2017/184850	04/20/2017	PHYSICAL CHANNELS IN NEW RADIO
CN	201780031149.8	ZL201780031149.8	04/20/2017	SYSTEM INFORMATION PROVISIONING AND LIGHT WEIGHT CONNECTION SIGNALING
DE	17721261.0	60 2017 028 750.4	04/20/2017	SYSTEM INFORMATION PROVISIONING AND LIGHT WEIGHT CONNECTION SIGNALING
EP	17721261.0	3446515	04/20/2017	SYSTEM INFORMATION PROVISIONING AND LIGHT WEIGHT CONNECTION SIGNALING
FR	17721261.0	3446515	04/20/2017	SYSTEM INFORMATION PROVISIONING AND LIGHT WEIGHT CONNECTION SIGNALING
GB	17721261.0	3446515	04/20/2017	SYSTEM INFORMATION PROVISIONING AND LIGHT WEIGHT CONNECTION SIGNALING
IN	201817040716		04/20/2017	SYSTEM INFORMATION PROVISIONING AND LIGHT WEIGHT CONNECTION SIGNALING
IT	17721261.0	502021000003884	04/20/2017	SYSTEM INFORMATION PROVISIONING AND LIGHT WEIGHT CONNECTION SIGNALING
JP	2018-554678	6812457	04/20/2017	SYSTEM INFORMATION PROVISIONING AND LIGHT WEIGHT CONNECTION SIGNALING
JP	2020-075248		04/20/2017	Light Weight Connection Signaling Procedures in 5G
KR	10-2018-7033133	10-2106581	04/20/2017	SYSTEM INFORMATION PROVISIONING AND LIGHT WEIGHT CONNECTION SIGNALING
NL	17721261.0	3446515	04/20/2017	SYSTEM INFORMATION PROVISIONING AND LIGHT WEIGHT CONNECTION SIGNALING
US	15/492,571	10,390,331	04/20/2017	System Information Provisioning And Light Weight Connection Signaling
US	16/505,772	10880868	04/20/2017	System Information Provisioning And Light Weight Connection Signalling
US	62/325,380		04/20/2016	Light Weight Connection Signaling Procedures in 5G
WO	PCT/US17/028579	WO2017/184842	04/20/2017	SYSTEM INFORMATION PROVISIONING AND LIGHT WEIGHT CONNECTION SIGNALING
CN	201780037883.5	ZL201780037883.5	04/20/2017	Mobility Signaling Load Reduction
CN	202110971537.2	CN 113676888 A	04/20/2017	Mobility Signaling Load Reduction
DE	17721264.4	3446537	04/20/2017	Mobility Signaling Load Reduction
EP	17721264.4	3446537	04/20/2017	Mobility Signaling Load Reduction
EP	21176661.3		04/20/2017	Mobility Signaling Load Reduction
FR	17721264.4	3446537	04/20/2017	Mobility Signaling Load Reduction
GB	17721264.4	3446537	04/20/2017	Mobility Signaling Load Reduction

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Country	Application No.	Patent or Publication No.	Filing Date	Title
IN	201817039979	WO 2017/184856	04/20/2017	Mobility Signaling Load Reduction
JP	2018-554757	6657424	04/20/2017	Mobility Signaling Load Reduction
JP	2020-017955	6876838	04/20/2017	Mobility Signaling Load Reduction
KR	10-2018-7033421		04/20/2017	Mobility Signaling Load Reduction
KR	10-2020-7013739	10-2257786	04/20/2017	Mobility Signaling Load Reduction
NL	17721264.4	3446537	04/20/2017	Mobility Signaling Load Reduction
US	15/492,921	10,687,299	04/20/2017	Mobility Signaling Load Reduction
US	16/858,855	US-2020-0260402	04/20/2017	Mobility Signaling Load Reduction
US	62/325,450		04/20/2016	Mobility Signaling Load Reduction
WO	PCT/US17/028612	WO2017/184856	04/20/2017	Mobility Signaling Load Reduction
US	62/331,301		05/03/2016	On-Demand System Information Provisioning and Update Notification in 5G
US	62/331,202		05/03/2016	Efficient System Information Provisioning in Common Areas
CN	201780036439.1	CN 109314887 A	05/12/2017	Connecting to Virtualized Mobile Core Networks
DE	17725468.7	60 2017 035 655.7	05/12/2017	Connecting to Virtualized Mobile Core Networks
FR	17725468.7	3456090	05/12/2017	Connecting to Virtualized Mobile Core Networks
GB	17725468.7	3456090	05/12/2017	Connecting to Virtualized Mobile Core Networks
IN	201817044047		05/12/2017	Connecting to Virtualized Mobile Core Networks
JP	2018-558723		05/12/2017	Connecting to Virtualized Mobile Core Networks
JP	2020-131688		05/12/2017	Connecting to Virtualized Mobile Core Networks
KR	10-2018-7036010	10-2284105	05/12/2017	Connecting to Virtualized Mobile Core Networks
KR	10-2021-7023766		05/12/2017	Connecting to Virtualized Mobile Core Networks
NL	17725468.7	3456090	05/12/2017	Connecting to Virtualized Mobile Core Networks
US	15/593,895	10,986,675	05/12/2017	Connecting to Virtualized Mobile Core Networks
US	17/169,819	US-2021-0212134	05/12/2017	Connecting to Virtualized Mobile Core Networks
US	62/335,511		05/12/2016	Connecting to Virtualized Mobile Core Networks
WO	PCT/US17/32424	WO2017/197273	05/12/2017	Connecting to Virtualized Mobile Core Networks
EP	17725468.7	3456090	05/12/2017	Connecting to Virtualized Mobile Core Networks
EP	21153408.6	3840464	05/12/2017	Connecting to Virtualized Mobile Core Networks
US	62/338,350		05/18/2016	Efficient CSI-RS Design for 5G 3D MIMO
CN	201780043437.5	ZL201780043437.5	05/11/2017	New Radio Downlink Control Channel
IN	201817046633		05/11/2017	New Radio Downlink Control Channel
JP	2018-558685	6935426	05/11/2017	New Radio Downlink Control Channel
KR	10-2018-7035897		05/11/2017	New Radio Downlink Control Channel



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Country	Application No.	Patent or Publication No.	Filing Date	Title
US	15/592,997	10,524,244	05/11/2017	RADIO DOWNLOAD CONTROL CHANNEL
US	16/681,182	11,051,293	05/11/2017	NEW RADIO PDCCH TO FACILITATE NUMEROLOGY OPERATIONS
US	17/339,242	US-2021-0360595	05/11/2017	NEW RADIO PDCCH TO FACILITATE NUMEROLOGY OPERATIONS
US	62/334,935		05/11/2016	New Radio Downlink Control Channel
WO	PCT/US17/32176	WO2017/197125	05/11/2017	New Radio Downlink Control Channel
EP	17725438.0	3455985	05/11/2017	New Radio Downlink Control Channel
CN	201780045506.6	ZL 201780045506.6	06/15/2017	UPLOAD CONTROL SIGNALING FOR NEW RADIO
IN	201817047893		06/15/2017	UPLOAD CONTROL SIGNALING FOR NEW RADIO
JP	2018-565780	6850308	06/15/2017	UPLOAD CONTROL SIGNALING FOR NEW RADIO
KR	10-2019-7001379		06/15/2017	UPLOAD CONTROL SIGNALING FOR NEW RADIO
US	15/624,378	10,367,620	06/15/2017	Upload Control Signaling For New Radio
US	16/434,280	10,868,653	06/15/2017	Upload Control Signaling For New Radio
US	17/090,189	US-2021-0126749	06/15/2017	Upload Control Signaling For New Radio
US	62/350,437		06/15/2016	UL Control Signaling for NR
WO	PCT/US17/37707	WO2017/218794	06/15/2017	UPLOAD CONTROL SIGNALING FOR NEW RADIO
EP	17733692.2		06/15/2017	UPLOAD CONTROL SIGNALING FOR NEW RADIO
CN	201780050084.1	CN109644494A	06/15/2017	RANDOM ACCESS PROCEDURES IN NEXT GENERATION NETWORKS
EP	17733295.4		06/15/2017	RANDOM ACCESS PROCEDURES IN NEXT GENERATION NETWORKS
IN	201817047894		06/15/2017	RANDOM ACCESS PROCEDURES IN NEXT GENERATION NETWORKS
IN	202018055244		06/15/2017	Random Access Procedures in NextGen Networks
JP	2018-565870		06/15/2017	RANDOM ACCESS PROCEDURES IN NEXT GENERATION NETWORKS
JP	2021-092593		06/15/2017	Random Access Procedures in NextGen Networks
KR	10-2019-7001324	10-2344898	06/15/2017	RANDOM ACCESS PROCEDURES IN NEXT GENERATION NETWORKS
KR	10-2021-7042480		06/15/2017	Random Access Procedures in NextGen Networks
US	15/624,124	10,182,459	06/15/2017	Random Access Procedures in Next Gen Networks
US	16/204,922	10,616,926	06/15/2017	RANDOM ACCESS PROCEDURES IN NEXT GEN NETWORKS
US	16/808,849	10,849,166	06/15/2017	RANDOM ACCESS PROCEDURES IN NEXT GEN NETWORKS
US	62/350,379		06/15/2016	Random Access Procedures in NextGen Networks

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Country	Application No.	Patent or Publication No.	Filing Date	Title
WO	PCT/US17/37658	WO2017/218762	06/15/2017	RANDOM ACCESS PROCEDURES IN NEXT GENERATION NETWORKS
CN	201780049898.3	CN109644089A	06/15/2017	Grant-less Uplink Transmission for New Radio
EP	17733691.4		06/15/2017	Grant-less Uplink Transmission for New Radio
IN	201817047900		06/15/2017	Grant-less Uplink Transmission for New Radio
JP	2018-565781		06/15/2017	Grant-less Uplink Transmission for New Radio
JP	2021-148776		06/15/2017	Grant-less Uplink Transmission for New Radio
KR	10-2019-7001407		06/15/2017	Grant-less Uplink Transmission for New Radio
US	15/624,354	10,631,319	06/15/2017	Grant-less Uplink Transmission for New Radio
US	16/825,516	US-2020-0221480	06/15/2017	Grant-less Uplink Transmission for New Radio
US	62/350,550		06/15/2016	Grant-less Uplink Transmission for New Radio
WO	PCT/US17/37693	WO2017/218785	06/15/2017	Grant-less Uplink Transmission for New Radio
CN	201780070750.8	CN109997334A	10/06/2017	SESSION MANAGEMENT WITH RELAYING AND CHARGING FOR INDIRECT CONNECTION FOR INTERNET OF THINGS APPLICATIONS IN 3GPP NETWORK
EP	17788028.3		10/06/2017	SESSION MANAGEMENT WITH RELAYING AND CHARGING FOR INDIRECT CONNECTION FOR INTERNET OF THINGS APPLICATIONS IN 3GPP NETWORK
US	16/339,517	US-2020-0053802	10/06/2017	SESSION MANAGEMENT WITH RELAYING AND CHARGING FOR INDIRECT CONNECTION FOR INTERNET OF THINGS APPLICATIONS IN 3GPP NETWORK
US	62/404,909		10/06/2016	Session Management with Relaying and Charging for Indirect Connection for IoT Application in 3GPP Network
WO	PCT/US17/55573	WO2018/067956	10/06/2017	SESSION MANAGEMENT WITH RELAYING AND CHARGING FOR INDIRECT CONNECTION FOR INTERNET OF THINGS APPLICATIONS IN 3GPP NETWORK
CN	201780070756.5	CN109952741A	10/05/2017	Capability Exposure for Service Instantiation
EP	EP17788018.4		10/05/2017	Capability Exposure for Service Instantiation
US	16/339,443	11,252,048	10/05/2017	Capability Exposure for Service Instantiation
US	17/569,561		10/05/2017	Capability Exposure for Service Instantiation
US	62/404,467		10/05/2016	Capability Exposure for Service Instantiation
WO	PCT/US17/055270	WO2018/067780	10/05/2017	Capability Exposure for Service Instantiation
US	62/373,176		08/10/2016	Configurable RS Design for New Radio
US	62/373,850		08/11/2016	UL sounding techniques and methods for NR

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
CN	201780059924.0	CN110326228A	08/11/2017	CSI Feedback Design for New Radio
EP	17755008.4		08/11/2017	CSI Feedback Design for New Radio
IN	201917008719		08/11/2017	CSI Feedback Design for New Radio
JP	2019-507297		08/11/2017	CSI Feedback Design for New Radio
KR	10-2019-7006919	10-2168480	08/11/2017	CSI Feedback Design for New Radio
US	16/323,896	10735980	08/11/2017	CSI Feedback Design for New Radio
US	16/910,809	11,064,374	08/11/2017	CSI Feedback Design for New Radio
US	17/346,387		08/11/2017	CSI FEEDBACK DESIGN FOR NEW RADIO
US	62/373,645		08/11/2016	CSI Feedback Design for New Radio
WO	PCT/US17/46573	WO2018/031924	08/11/2017	CSI Feedback Design for New Radio
CN	201780059979.1	CN109792283A	08/11/2017	BEAM MANAGEMENT
EP	17757636.0		08/11/2017	BEAM MANAGEMENT
IN	201917008712		08/11/2017	BEAM MANAGEMENT
JP	2019-507202	6992049	08/11/2017	BEAM MANAGEMENT
KR	10-2019-7006964	10-2185095	08/11/2017	BEAM MANAGEMENT
KR	10-2020-7033795	10-2236217	08/11/2017	NR Procedures for Beam Management
US	16/323,796	10,932,150	08/11/2017	BEAM MANAGEMENT
US	17/146,539	US-2021-0136614	08/11/2017	Beam Management
US	62/373,617		08/11/2016	NR Procedures for Beam Management
WO	PCT/US17/46547	WO2018/031908	08/11/2017	BEAM MANAGEMENT
CN	201780049811.2	CN109644493A	06/15/2017	GRANT-LESS OPERATIONS
EP	17733696.3		06/15/2017	GRANT-LESS OPERATIONS
IN	201817047895		06/15/2017	GRANT-LESS OPERATIONS
JP	2018-565869	6703145	06/15/2017	GRANT-LESS OPERATIONS
JP	2020-082158	6956227	06/15/2017	Mechanisms for Grant-less Uplink Transmission
KR	10-2019-7001393	10-2166986	06/15/2017	GRANT-LESS OPERATIONS
US	15/624,506	10,306,671	06/15/2017	GRANT-LESS OPERATIONS
US	16/384,337	10687354	06/15/2017	GRANT-LESS OPERATIONS
US	62/373,691		08/11/2016	Mechanisms for Grant-less Uplink Transmission
WO	PCT/US17/37788	WO2017/218847	06/15/2017	GRANT-LESS OPERATIONS
CN	201780049887.5	CN109891832A	06/15/2017	Network Slice Discovery and Selection
EP	17734203.7		06/15/2017	Network Slice Discovery and Selection
JP	2018-565887	6692936	06/15/2017	Network Slice Discovery and Selection

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Country	Application No.	Patent or Publication No.	Filing Date	Title
KR	10-2019-7001392		06/15/2017	Network Slice Discovery and Selection
US	15/624,594	US2017/0367036	06/15/2017	Network Slice Discovery and Selection
US	62/373,768		08/11/2016	Network Slice Discovery and Selection
WO	PCT/US17/37792	WO2017/218849	06/15/2017	Network Slice Discovery and Selection
CN	201780060114.7	CN109845129A	08/11/2017	BEAMFORMING SWEEPING AND TRAINING IN A FLEXIBLE FRAME STRUCTURE FOR NEW RADIO
EP	17754998.7		08/11/2017	BEAMFORMING SWEEPING AND TRAINING IN A FLEXIBLE FRAME STRUCTURE FOR NEW RADIO
IN	201917008146		08/11/2017	BEAMFORMING SWEEPING AND TRAINING IN A FLEXIBLE FRAME STRUCTURE FOR NEW RADIO
JP	2019-507334	6980759	08/11/2017	BEAMFORMING SWEEPING AND TRAINING IN A FLEXIBLE FRAME STRUCTURE FOR NEW RADIO
KR	10-2019-7006967		08/11/2017	BEAMFORMING SWEEPING AND TRAINING IN A FLEXIBLE FRAME STRUCTURE FOR NEW RADIO
US	16/323,840	10840982	08/11/2017	BEAMFORMING SWEEPING AND TRAINING IN A FLEXIBLE FRAME STRUCTURE FOR NEW RADIO
US	17/080,134	US-2021-0044339	08/11/2017	Beamforming Sweeping and Training in a Flexible Frame Structure for New Radio
US	62/373,662		08/11/2016	Beamforming Sweeping and Training in a Flexible Frame Structure for NR
WO	PCT/US17/046483	WO2018/031875	08/11/2017	BEAMFORMING SWEEPING AND TRAINING IN A FLEXIBLE FRAME STRUCTURE FOR NEW RADIO
US	62/399,921		09/26/2016	Mechanisms to improve reliability of PHY channels in New Radio
US	62/400,813		09/28/2016	NR Random Access
US	62/401,055		09/28/2016	Methods for Dynamic Transmission Mode Switching and Initial Access in New Radio
US	62/401,062		09/28/2016	Grant-less Operation and Frame Structure for NR
CN	201780067896.7	CN109891772A	11/03/2017	Frame Structure in NR
EP	17866361.3		11/03/2017	Frame Structure in NR
US	16/346,972	10,932,276	11/03/2017	Frame Structure in NR
US	17/132,026	US-2021-0176765	11/03/2017	Frame Structure in NR
US	62/416,902		11/03/2016	Reference Signals and Control Channels in NR
WO	PCT/US17/059890	WO2018/097947	11/03/2017	Frame Structure in NR
US	62/417,162		11/03/2016	Beam Based Mobility and Beam Management in NR
US	62/440,678		12/30/2016	Session Management with Relaying and Charging for Indirect Connection for IoT Application in 3GPP Network
CN	201880011504.X	CN110291750A	01/05/2018	Mechanisms for Efficient access and Transmission in NR

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Country	Application No.	Patent or Publication No.	Filing Date	Title
IN	201917031388	201917031388A	01/05/2018	Mechanisms for Efficient access and Transmission in NR
JP	2019-536866		01/05/2018	Mechanisms for Efficient access and Transmission in NR
KR	10-2019-7022733		01/05/2018	Mechanisms for Efficient access and Transmission in NR
US	16/475,700	11,044,739	01/05/2018	Mechanisms for Efficient access and Transmission in NR
US	17/325,624	US-2021-0289517	01/05/2018	Mechanisms for Efficient access and Transmission in NR
US	62/443,497		01/06/2017	Mechanisms for Efficient access and Transmission in NR
WO	PCT/US18/012585	WO2018/129319	01/05/2018	Mechanisms for Efficient access and Transmission in NR
EP	18702579.6		01/05/2018	Mechanisms for Efficient access and Transmission in NR
US	62/453,855		02/02/2017	Mechanisms for Efficient Physical Channel and Beam Management design in NR
CN	201880019873.3	CN110447247A	03/20/2018	SERVICE CAPABILITY EXPOSURE AT THE USER EQUIPMENT
EP	22154778.9		03/20/2018	SERVICE CAPABILITY EXPOSURE AT THE USER EQUIPMENT
US	16/494,907	10,932,111	03/20/2018	SERVICE CAPABILITY EXPOSURE AT THE USER EQUIPMENT
US	17/149,902	US-2021-0136548	03/20/2018	Service capability exposure at the user equipment
US	62/473,658		03/20/2017	SERVICE CAPABILITY EXPOSURE AT THE USER EQUIPMENT
WO	PCT/US18/023257	WO2018/175378	03/20/2018	SERVICE CAPABILITY EXPOSURE AT THE USER EQUIPMENT
EP	18720047.2		03/20/2018	SERVICE CAPABILITY EXPOSURE AT THE USER EQUIPMENT
EP	18722261.7		03/30/2018	Interworking LPWAN End Nodes in Mobile Operator Network
US	16/498,062	11,134,543	03/30/2018	Interworking LPWAN End Nodes in Mobile Operator Network
US	62/479,813		03/31/2017	Interworking LPWAN End Nodes in Mobile Operator Network
WO	PCT/US18/025322	WO2018/183789	03/30/2018	Interworking LPWAN End Nodes in Mobile Operator Network
DE	18717461.0	60 2018 017 692.6	03/20/2018	Scheduling and Control in New Radio Using Preemption Indication
EP	18717461.0	3603259	03/20/2018	Scheduling and Control in New Radio Using Preemption Indication
FR	18717461.0	3603259	03/20/2018	Scheduling and Control in New Radio Using Preemption Indication
GB	18717461.0	3603259	03/20/2018	Scheduling and Control in New Radio Using Preemption Indication

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
IT	18717461.0	502021000058370	03/20/2018	Scheduling and Control in New Radio Using Preemption Indication
NL	18717461.0	3603259	03/20/2018	Scheduling and Control in New Radio Using Preemption Indication
US	16/493,523	10,932,278	03/20/2018	SCHEDULING AND CONTROL IN NEW RADIO USING PREEMPTION INDICATION
US	62/473,715		03/20/2017	Scheduling and Control in New Radio
WO	PCT/US18/023334	WO2018/175420	03/20/2018	SCHEDULING AND CONTROL IN NEW RADIO USING PREEMPTION INDICATION
US	16/495,540	US-2020-0196275	03/23/2018	SUPERFRAME STRUCTURE AND PAGING OPERATIONS IN NEW RADIO
US	16/495,570	11,224,073	03/22/2018	BEAM TRAINING AND INITIAL ACCESS
US	17/539,341		03/22/2018	BEAM TRAINING AND INITIAL ACCESS
US	62/475,744		03/23/2017	SUPERFRAME STRUCTURE AND OPERATIONS IN NEW RADIO
WO	PCT/US18/023749	WO2018/175714	03/22/2018	BEAM TRAINING AND INITIAL ACCESS
WO	PCT/US18/023937	WO2018/175840	03/23/2018	SUPERFRAME STRUCTURE AND PAGING OPERATIONS IN NEW RADIO
EP	18717179.8		03/22/2018	BEAM TRAINING AND INITIAL ACCESS
EP	18717478.4		03/23/2018	SUPERFRAME STRUCTURE AND PAGING OPERATIONS IN NEW RADIO
US	62/501,345		05/04/2017	ON HARQ AND LOW LATENCY TRANSMISSIONS IN UPLINK FOR NEW RADIO
CN	201880039369.X	CN110892664A	06/15/2018	BEAM BASED DOWNLINK CONTROL SIGNALING
EP	18738099.3		06/15/2018	BEAM BASED DOWNLINK CONTROL SIGNALING
IN	202017001225	202017001225 A	06/15/2018	BEAM BASED DOWNLINK CONTROL SIGNALING
JP	2019-569757		06/15/2018	BEAM BASED DOWNLINK CONTROL SIGNALING
KR	10-2020-7000887		06/15/2018	BEAM BASED DOWNLINK CONTROL SIGNALING
US	16/622,523	US-2020-0213978	06/15/2018	BEAM BASED DOWNLINK CONTROL SIGNALING
US	62/520,203		06/15/2017	BEAM BASED DOWNLINK CONTROL SIGNALING IN NEW RADIO
WO	PCT/US18/37682	WO2018/232199	06/15/2018	BEAM BASED DOWNLINK CONTROL SIGNALING
CN	201880039360.9	CN 110741713 A	06/15/2018	BEAM FAILURE RECOVERY, SCHEDULING REQUESTS, STATUS REPORTS, AND LOGICAL CHANNEL PRIORITIZATION
EP	18739677.5		06/15/2018	BEAM FAILURE RECOVERY, SCHEDULING REQUESTS, STATUS REPORTS, AND LOGICAL CHANNEL PRIORITIZATION

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
IN	202017001515	202017001515 A	06/15/2018	BEAM FAILURE RECOVERY, SCHEDULING REQUESTS, STATUS REPORTS, AND LOGICAL CHANNEL PRIORITIZATION
JP	2019-569686		06/15/2018	BEAM FAILURE RECOVERY, SCHEDULING REQUESTS, STATUS REPORTS, AND LOGICAL CHANNEL PRIORITIZATION
KR	10-2020-7000989		06/15/2018	BEAM FAILURE RECOVERY, SCHEDULING REQUESTS, STATUS REPORTS, AND LOGICAL CHANNEL PRIORITIZATION
US	16/621,088	11,246,147	06/15/2018	SCHEDULING REQUESTS, STATUS REPORTS, AND LOGICAL CHANNEL PRIORITIZATION
US	17/555,933		06/15/2018	Scheduling Request Status Reports, And Logical Channel Prioritization
US	62/520,226		06/15/2017	Beam Failure Recovery And Scheduling Request Design
WO	PCT/US18/37785		06/15/2018	BEAM FAILURE RECOVERY, SCHEDULING REQUESTS, STATUS REPORTS, AND LOGICAL CHANNEL PRIORITIZATION
CN	201880039346.9	CN 110771216 A	06/15/2018	UPLINK TRANSMIT POWER CONTROL
IN	202017001517	202017001517 A	06/15/2018	UPLINK TRANSMIT POWER CONTROL
JP	2019-569691		06/15/2018	UPLINK TRANSMIT POWER CONTROL
KR	10-2020-7001346		06/15/2018	UPLINK TRANSMIT POWER CONTROL
US	16/621,043	US-2020-0205085	06/15/2018	UPLINK TRANSMIT POWER CONTROL
US	62/520,368		06/15/2017	MECHANISMS OF UPLINK TRANSMIT POWER CONTROL FOR NEW RADIO
WO	PCT/US18/037761	WO2018/232245	06/15/2018	UPLINK TRANSMIT POWER CONTROL
EP	18738111.6		06/15/2018	UPLINK TRANSMIT POWER CONTROL
US	16/622,359	US-2020-0205156	06/26/2018	LTE COEXISTENCE WITH 5G NR
US	62/604,178		06/26/2017	LTE COEXISTENCE WITH 5G NR
WO	PCT/US18/39503	WO2019/005797	06/26/2018	LTE COEXISTENCE WITH 5G NR
CN	201880061842.4	CN111133800A	08/09/2018	Access Control in 5G NR
EP	18765233.4	3665952	08/09/2018	Access Control in 5G NR
IN	202017008410	202017008410 A	08/09/2018	Access Control in 5G NR
JP	2020-507001		08/09/2018	Access Control in 5G NR
KR	10-2020-7006462		08/09/2018	Access Control in 5G NR
US	16/637,506	11,240,736	08/09/2018	Access Control in 5G NR
US	17/556,058		08/09/2018	Access Control in 5G NR
US	62/542,977		08/09/2017	Access Control in 5G NR

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Country	Application No.	Patent or Publication No.	Filing Date	Title
WO	PCT/US18/45958	WO2019/032798	08/09/2018	Access Control in 5G NR
CN	201880061978.5	CN 111183606 A	08/10/2018	ENHANCED CONNECTED MODE DRX PROCEDURES FOR NR
EP	18765512.1	3665849	08/10/2018	ENHANCED CONNECTED MODE DRX PROCEDURES FOR NR
US	16/637,326	US-2020-0245395	08/10/2018	ENHANCED CONNECTED MODE DRX PROCEDURES FOR NR
US	62/543,755		08/10/2017	Connected Mode DRX Procedures for NR
WO	PCT/US18/46296	WO2019/033017	08/10/2018	ENHANCED CONNECTED MODE DRX PROCEDURES FOR NR
CN	201880064742.7	CN111183695A	08/09/2018	Mechanisms of Grant-free Operations for NR
EP	18762432.5	3666002	08/09/2018	Mechanisms of Grant-free Operations for NR
US	16/637,875	US-2020-0267698	08/09/2018	Mechanisms of Grant-free Operations for NR
US	62/544,497		08/11/2017	Mechanisms of Grant-free Operations for NR
WO	PCT/US18/45961	WO2019/032801	08/09/2018	Mechanisms of Grant-free Operations for NR
CN	201880066107.2	CN111201830A	09/07/2018	Multiple TRPs and Panels Transmission with dynamic bandwidth for NR
EP	18786078.8	3679760	09/07/2018	Multiple TRPs and Panels Transmission with dynamic bandwidth for NR
IN	202017013980	202017013980 A	09/07/2018	Multiple TRPs and Panels Transmission with dynamic bandwidth for NR
JP	2020-513782		09/07/2018	Multiple TRPs and Panels Transmission with dynamic bandwidth for NR
KR	10-2020-7009895		09/07/2018	Multiple TRPs and Panels Transmission with dynamic bandwidth for NR
US	16/644,352	US-2021-0076445	09/07/2018	Multiple TRPs and Panels Transmission with dynamic bandwidth for NR
US	62/556,005		09/08/2017	Multiple TRPs and Panels Transmission with dynamic bandwidth for NR
WO	PCT/US18/049879	WO2019/051177	09/07/2018	Multiple TRPs and Panels Transmission with dynamic bandwidth for NR
US	62/564,461		09/28/2017	Enhanced Connected Mode DRX Procedures For NR
CN	201880070294.1	CN 111373665 A	09/28/2018	TIME AND FREQUENCY TRACKING REFERENCE SIGNALS IN NEW RADIO
US	16/650,892	US-2020-0287678	09/28/2018	TIME AND FREQUENCY TRACKING REFERENCE SIGNALS IN NEW RADIO
US	62/565,829		09/29/2017	Mechanisms of TRS for NR
WO	PCT/US18/053462	WO2019/067925	09/28/2018	TIME AND FREQUENCY TRACKING REFERENCE SIGNALS IN NEW RADIO



## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
EP	18792651.4	3685514	09/28/2018	TIME AND FREQUENCY TRACKING REFERENCE SIGNALS IN NEW RADIO
US	62/564,897		09/28/2017	Multiple TRPs and Panels Transmission with dynamic bandwidth for NR
US	62/580,812		11/02/2017	Beam Failure Recovery, Scheduling Request Design, And Enhancement To LCP For NR
CN	201980006222.5	CN 111448808 A	01/03/2019	Multicast and Broadcast Services in 5G Networks for IOT Applications
US	16/957,997	US-2020-0344576	01/03/2019	Multicast and Broadcast Services in 5G Networks for IOT Applications
US	62/613,119		01/03/2018	Multicast and Broadcast Services in 5G Networks for IOT Applications
WO	PCT/US19/012153	WO2019/136128	01/03/2019	Multicast and Broadcast Services in 5G Networks for IOT Applications
WO	PCT/US19/12040		01/02/2019	Multicast and Broadcast Services in 5G Networks for IOT Applications
EP	19702983.8	3735785	01/03/2019	Multicast and Broadcast Services in 5G Networks for IOT Applications
CN	201880074334.X	CN111434158 A	11/15/2018	METHOD AND DEVICE FOR POWER HEADROOM REPORTING IN 5G NR
EP	18816351.3	3698582	11/15/2018	METHOD AND DEVICE FOR POWER HEADROOM REPORTING IN 5G NR
US	16/763,610	US-2020-0288412	11/15/2018	METHOD AND DEVICE FOR POWER HEADROOM REPORTING IN 5G NR
US	62/586,593		11/15/2017	Power Headroom Reporting in 5G NR
WO	PCT/US18/061232	WO2019/099634	11/15/2018	METHOD AND DEVICE FOR POWER HEADROOM REPORTING IN 5G NR
US	62/587,248		11/16/2017	Multiple TRPs and Panels Transmission with dynamic bandwidth for NR
US	62/615,716		01/10/2018	Beam Failure Recovery, Scheduling Requests, Status Reports, And Logical Channel Prioritization
US	62/616,009		01/11/2018	Multiple TRPs and Panels Transmission with dynamic bandwidth for NR
US	62/615,773		01/10/2018	Enhanced Connected Mode DRX Procedures For NR
CN	201980029267.4	CN 112042233 A	03/15/2019	METHODS OF MANAGING CONNECTIONS TO A LOCAL AREA DATA NETWORK (LADN) IN A 5G NETWORK
EP	19714928.9	3777344	03/15/2019	METHODS OF MANAGING CONNECTIONS TO A LOCAL AREA DATA NETWORK (LADN) IN A 5G NETWORK

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
IN	202017047060	202017047060 A	03/15/2019	METHODS OF MANAGING CONNECTIONS TO A LOCAL AREA DATA NETWORK (LADN) IN A 5G NETWORK
JP	2020-554455		03/15/2019	METHODS OF MANAGING CONNECTIONS TO A LOCAL AREA DATA NETWORK (LADN) IN A 5G NETWORK
KR	10-2020-7031739		03/15/2019	METHODS OF MANAGING CONNECTIONS TO A LOCAL AREA DATA NETWORK (LADN) IN A 5G NETWORK
US	17/045,554	US-2021-0168584	03/15/2019	METHODS OF MANAGING CONNECTIONS TO A LOCAL AREA DATA NETWORK (LADN) IN A 5G NETWORK
US	62/653,827		04/06/2018	Methods Of Managing Connections To A Local Area Data Network (LADN) In A 5G Network
WO	PCT/US19/022528	2019/194954	03/15/2019	METHODS OF MANAGING CONNECTIONS TO A LOCAL AREA DATA NETWORK (LADN) IN A 5G NETWORK
CN	201980030657.3	CN 112088514 A	04/05/2019	Configuration and Signaling for UL NOMA Operations
EP	19720009.0	3776989	04/05/2019	Configuration and Signaling for UL NOMA Operations
US	16/981,927	US-2021-0045181	04/05/2019	Configuration and Signaling for UL NOMA Operations
US	62/653,074		04/05/2018	Configuration and Signaling for UL NOMA Operations
WO	PCT/US19/025991	2019/195680	04/05/2019	Configuration and Signaling for UL NOMA Operations
CN	201980031397.1	CN112106387A	05/10/2019	SERVER IN INTERNET-OF-THINGS COMMUNICATION PATH
EP	19726543.2	3777263	05/10/2019	SERVER IN INTERNET-OF-THINGS COMMUNICATION PATH
IN	202017052518	202017052518 A	05/10/2019	SERVER IN INTERNET-OF-THINGS COMMUNICATION PATH
JP	2020-563523		05/10/2019	SERVER IN INTERNET-OF-THINGS COMMUNICATION PATH
KR	10-2020-7032032		05/10/2019	SERVER IN INTERNET-OF-THINGS COMMUNICATION PATH
US	17/049,766	US-2021-0258869	05/10/2019	SERVER IN INTERNET-OF-THINGS COMMUNICATION PATH
US	62/669,669		05/10/2018	SERVER IN INTERNET-OF-THINGS COMMUNICATION PATH
WO	PCT/US19/031704		05/10/2019	SERVER IN INTERNET-OF-THINGS COMMUNICATION PATH
CN	201980032922.1	CN112119652A	05/17/2019	Identity layer for IoT Devices
US	17/056,610	US-2021-0235266	05/17/2019	IDENTITY LAYER FOR IOT DEVICES

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
US	62/673,337		05/18/2018	Identity layer for IoT Devices
WO	PCT/US19/032830		05/17/2019	Identity layer for IoT Devices
EP	19731377.8	3794857	05/17/2019	Identity layer for IoT Devices
CN	201980043064.0	CN 112352464 A	04/26/2019	Listen-Before-Talk In Beam Centric Cells
EP	19722454.6	3785483	04/26/2019	Listen-Before-Talk In Beam Centric Cells
US	17/050,047	US-2021-0392683	04/26/2019	Listen-Before-Talk In Beam Centric Cells
US	62/662,968		04/26/2018	Listen-Before-Talk In Beam Centric Cells
WO	PCT/US19/029372	2019/210185	04/26/2019	Listen-Before-Talk In Beam Centric Cells
CN	201980051415.2	CN112534840A	07/02/2019	5G Delay Tolerant Data Services
US	17/257,140	US-2021-0127343	07/02/2019	5G Delay Tolerant Data Services
US	62/693,108		07/02/2018	5G Delay Tolerant Data Services
WO	PCT/US19/040309	WO 2020/010088	07/02/2019	5G Delay Tolerant Data Services
EP	19745406.9	3799695	07/02/2019	5G Delay Tolerant Data Services
CN	201980046050.4	CN112385201A	07/09/2019	Core Network Assisted Service Discovery
US	17/258,237	US-2021-0282003	07/09/2019	Core Network Assisted Service Discovery
US	62/695,280		07/09/2018	Core Network Assisted Service Discovery
WO	PCT/US19/040983	WO/2020/014214	07/09/2019	Core Network Assisted Service Discovery
EP	19749490.9	3821590	07/09/2019	Core Network Assisted Service Discovery
CN	201980031091.6	CN 112088569 A	05/09/2019	CHANNEL ACCESS WITH A NEW RADIO UNLICENSED SERVING CELL
EP	19727557.1	3791669	05/09/2019	CHANNEL ACCESS WITH A NEW RADIO UNLICENSED SERVING CELL
IN	202017052514	202017052514 A	05/09/2019	CHANNEL ACCESS WITH A NEW RADIO UNLICENSED SERVING CELL
JP	2020-563563		05/09/2019	CHANNEL ACCESS WITH A NEW RADIO UNLICENSED SERVING CELL
KR	10-2020-7031919		05/09/2019	CHANNEL ACCESS WITH A NEW RADIO UNLICENSED SERVING CELL
US	17/049,746	US-2021-0289548	05/09/2019	CHANNEL ACCESS WITH A NEW RADIO UNLICENSED SERVING CELL
US	62/669,086		05/09/2018	CHANNEL ACCESS WITH A NEW RADIO UNLICENSED SERVING CELL
WO	PCT/US19/031508	2019/217670	05/09/2019	CHANNEL ACCESS WITH A NEW RADIO UNLICENSED SERVING CELL
CN	201980031372.1	CN112119669A	05/10/2019	Channel Access Indication for Spectral Reuse, Power Savings and Coexistence

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
IN	202017052516	202017052516 A	05/10/2019	Channel Access Indication for Spectral Reuse, Power Savings and Coexistence
JP	2020-563454		05/10/2019	Channel Access Indication for Spectral Reuse, Power Savings and Coexistence
KR	10-2020-7035349		05/10/2019	Channel Access Indication for Spectral Reuse, Power Savings and Coexistence
US	17/051,245	US-2021-0235491	05/10/2019	Channel Access Indication for Spectral Reuse, Power Savings and Coexistence
US	62/669,569		05/10/2018	Channel Access Indication for Spectral Reuse, Power Savings and Coexistence
WO	PCT/US19/031770	2019/217852	05/10/2019	Channel Access Indication for Spectral Reuse, Power Savings and Coexistence
EP	19727560.5	3791670	05/10/2019	Channel Access Indication for Spectral Reuse, Power Savings and Coexistence
CN	201980031581.6	CN112106309A	05/10/2019	BEAM FAILURE RECOVERY IN NEW RADIO UNLICENSED SPECTRUM
EP	19727561.3	3791491	05/10/2019	BEAM FAILURE RECOVERY IN NEW RADIO UNLICENSED SPECTRUM
US	17/050,886	US-2021-0234601	05/10/2019	BEAM FAILURE RECOVERY IN NEW RADIO UNLICENSED SPECTRUM
US	62/669,708		05/10/2018	BEAM FAILURE RECOVERY IN NEW RADIO UNLICENSED SPECTRUM
WO	PCT/US19/031811	2019/217880	05/10/2019	BEAM FAILURE RECOVERY IN NEW RADIO UNLICENSED SPECTRUM
CN	201980031509.3	CN112106435A	05/09/2019	MECHANISM FOR SSB TRANSMISSION IN NR-U
EP	19726828.7	3791674	05/09/2019	Mechanism for SSB transmission in NR-U
IN	202017049103	202017049103 A	05/09/2019	Mechanism for SSB transmission in NR-U
JP	2020-563690		05/09/2019	Mechanism for SSB transmission in NR-U
KR	10-2020-7032033		05/09/2019	Mechanism for SSB transmission in NR-U
US	17/051,297	US-2021-0051683	05/09/2019	Mechanism for SSB transmission in NR-U
US	62/669,613		05/10/2018	Mechanism for SSB transmission in NR-U
WO	PCT/US19/031545	2019/217697	05/09/2019	Mechanism for SSB transmission in NR-U
CN	201980031519.7	CN112119670A	03/28/2019	Channelization and BWP
EP	19722720.0	3791667	03/28/2019	Channelization and BWP
IN	202017049096	202017049096 A	03/28/2019	Channelization and BWP
JP	2020-563531		03/28/2019	Channelization and BWP
KR	10-2020-7032301		03/28/2019	Channelization and BWP
US	17/052,871	US-2021-0360693	03/28/2019	Channelization and BWP

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
US	62/669,728		05/10/2018	Channelization and BWP
WO	PCT/US19/024620	2019/217007	03/28/2019	Channelization and BWP
US	62/687,598		06/20/2018	CHANNELIZATION AND BWP
US	16/973,294	US-2021-0250884	06/19/2019	Synchronization in multi-hop NR IAB deployment
US	62/687,577		06/20/2018	Synchronization in multi-hop NR IAB deployment
WO	PCT/US19/037965	WO 2019/246248	06/19/2019	Synchronization in multi-hop NR IAB deployment
EP	19735689.2	3794881	06/19/2019	Synchronization in multi-hop NR IAB deployment
CN	201980040945.7	CN112335192A	06/20/2019	EFFICIENT BUFFER MANAGEMENT IN MULTI-HOPS DATA FORWARDING
EP	19737371.5	3794759	06/20/2019	EFFICIENT BUFFER MANAGEMENT IN MULTI-HOPS DATA FORWARDING
IN	202117002273	202117002273 A	06/20/2019	EFFICIENT BUFFER MANAGEMENT IN MULTI-HOPS DATA FORWARDING
JP	2020-570876		06/20/2019	EFFICIENT BUFFER MANAGEMENT IN MULTI-HOPS DATA FORWARDING
KR	10-2021-7001452		06/20/2019	EFFICIENT BUFFER MANAGEMENT IN MULTI-HOPS DATA FORWARDING
US	17/253,173	US-2021-0282050	06/20/2019	EFFICIENT BUFFER MANAGEMENT IN MULTI-HOPS DATA FORWARDING
US	62/687,501		06/20/2018	EFFICIENT BUFFER MANAGEMENT IN MULTI-HOPS DATA FORWARDING
WO	PCT/US2019/038156	2019/246350	06/20/2019	EFFICIENT BUFFER MANAGEMENT IN MULTI-HOPS DATA FORWARDING
US	62/687,986		06/21/2018	Configuration and Signaling for UL NOMA Operations
US	62/688,024		06/21/2018	LISTEN-BEFORE-TALK IN BEAM CENTRIC CELLS
CN	201980043658.1	CN112385297A	06/28/2019	Prioritization Procedures for NR V2X Sidelink Shared Channel Data Transmission
EP	19746219.5	3815450	06/28/2019	Prioritization Procedures for NR V2X Sidelink Shared Channel Data Transmission
IN	202117003436	202117003436 A	06/28/2019	Prioritization Procedures for NR V2X Sidelink Shared Channel Data Transmission
JP	2020-572958		06/28/2019	Prioritization Procedures for NR V2X Sidelink Shared Channel Data Transmission
KR	10-2021-7002431		06/28/2019	Prioritization Procedures for NR V2X Sidelink Shared Channel Data Transmission
US	17/256,352	US20210153065	06/28/2019	Prioritization Procedures for NR V2X Sidelink Shared Channel Data Transmission
US	62/691,302		06/28/2018	Prioritization Procedures for NR V2X Sidelink Shared Channel Data Transmission

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Country	Application No.	Patent or Publication No.	Filing Date	Title
WO	PCT/US19/039744	2020/006366	06/28/2019	Prioritization Procedures for NR V2X Sidelink Shared Channel Data Transmission
CN	201980043659.6	CN 112335312 A	06/28/2019	SIDELINK BUFFER STATUS REPORTS AND SCHEDULING REQUESTS FOR NEW RADIO VEHICLE SIDELINK SHARED CHANNEL DATA TRANSMISSIONS
EP	19744965.5	3794887	06/28/2019	SIDELINK BUFFER STATUS REPORTS AND SCHEDULING REQUESTS FOR NEW RADIO VEHICLE SIDELINK SHARED CHANNEL DATA TRANSMISSIONS
IN	202117003124	202117003124 A	06/28/2019	SIDELINK BUFFER STATUS REPORTS AND SCHEDULING REQUESTS FOR NEW RADIO VEHICLE SIDELINK SHARED CHANNEL DATA TRANSMISSIONS
JP	2020-572942		06/28/2019	SIDELINK BUFFER STATUS REPORTS AND SCHEDULING REQUESTS FOR NEW RADIO VEHICLE SIDELINK SHARED CHANNEL DATA TRANSMISSIONS
KR	10-2021-7002432		06/28/2019	SIDELINK BUFFER STATUS REPORTS AND SCHEDULING REQUESTS FOR NEW RADIO VEHICLE SIDELINK SHARED CHANNEL DATA TRANSMISSIONS
US	17/254,106	US-2021-0274545	06/28/2019	SIDELINK BUFFER STATUS REPORTS AND SCHEDULING REQUESTS FOR NEW RADIO VEHICLE SIDELINK SHARED CHANNEL DATA TRANSMISSIONS
US	62/691,300		06/28/2018	SIDELINK BUFFER STATUS REPORTS AND SCHEDULING REQUESTS FOR NEW RADIO VEHICLE SIDELINK SHARED CHANNEL DATA TRANSMISSIONS
WO	PCT/US19/039780	2020/006388	06/28/2019	SIDELINK BUFFER STATUS REPORTS AND SCHEDULING REQUESTS FOR NEW RADIO VEHICLE SIDELINK SHARED CHANNEL DATA TRANSMISSIONS
US	17/283,076	US-2021-0385642	10/04/2019	Device Discovery And Connectivity In A Cellular Network
US	62/742,638		10/08/2018	Device Discovery And Connectivity In A Cellular Network
WO	PCT/US2019/054698	WO/2020/076630	10/04/2019	Device Discovery And Connectivity In A Cellular Network
CN	201980052720.3	CN 112586026 A	08/08/2019	RADIO LINK MONITORING AND RADIO RESOURCE MANAGEMENT MEASUREMENT PROCEDURES FOR NR-U
IN	202117009378	202117009378 A	08/08/2019	RADIO LINK MONITORING AND RADIO RESOURCE MANAGEMENT MEASUREMENT PROCEDURES FOR NR-U

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Country	Application No.	Patent or Publication No.	Filing Date	Title
JP	2021-506546		08/08/2019	RADIO LINK MONITORING AND RADIO RESOURCE MANAGEMENT MEASUREMENT PROCEDURES FOR NR-U
KR	10-2021-7006503		08/08/2019	RADIO LINK MONITORING AND RADIO RESOURCE MANAGEMENT MEASUREMENT PROCEDURES FOR NR-U
US	17/265,973	US-2021-0321277	08/08/2019	RADIO LINK MONITORING AND RADIO RESOURCE MANAGEMENT MEASUREMENT PROCEDURES FOR NR-U
US	62/716,020		08/08/2018	RLM and RRM Measurement Procedures for NR-U
WO	PCT/US19/045755	WO 2020/033726	08/08/2019	RADIO LINK MONITORING AND RADIO RESOURCE MANAGEMENT MEASUREMENT PROCEDURES FOR NR-U
EP	19758572.2	3834460	08/08/2019	RADIO LINK MONITORING AND RADIO RESOURCE MANAGEMENT MEASUREMENT PROCEDURES FOR NR-U
CN	201980053348.8	CN112602280A	08/08/2019	Autonomous Uplink Transmission In Unlicensed New Radio Spectrum
EP	19755781.2	3818650	08/08/2019	Autonomous Uplink Transmission In Unlicensed New Radio Spectrum
US	17/265,245		08/08/2019	Autonomous Uplink Transmission In Unlicensed New Radio Spectrum
US	62/716,607		08/09/2018	Autonomous Uplink Transmission In Unlicensed New Radio Spectrum
WO	PCT/US19/045708	WO 2020/033689	08/08/2019	Autonomous Uplink Transmission In Unlicensed New Radio Spectrum
CN	201980052994.2	CN112567837A	07/08/2019	Resource Management for 5G eV2X
EP	19749870.2	3821658	07/08/2019	Resource Management for 5G eV2X
IN	202117009379	202117009379 A	07/08/2019	Resource Management for 5G eV2X
JP	2021-506704		07/08/2019	Resource Management for 5G eV2X
KR	10-2021-7006654		07/08/2019	Resource Management for 5G eV2X
US	17/265,919	US-2021-0219268	07/08/2019	Resource Management for 5G eV2X
US	62/716,674		08/09/2018	Resource Management for 5G eV2X
WO	PCT/US19/040828	WO 2020/033088	07/08/2019	Resource Management for 5G eV2X
CN	201980052981.5	CN112567673A	07/05/2019	BEAMFORMING AND GROUPING FOR NR V2X
EP	19745864.9	3818655	07/05/2019	BEAMFORMING AND GROUPING FOR NR V2X
IN	202117007803	202117007803 A	07/05/2019	BEAMFORMING AND GROUPING FOR NR V2X
JP	PCT/US19/040688		07/05/2019	BEAMFORMING AND GROUPING FOR NR V2X
KR	10-2021-7006685		07/05/2019	BEAMFORMING AND GROUPING FOR NR V2X

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
US	17/267,235	US-2021-0168574	07/05/2019	BEAMFORMING AND GROUPING FOR NR V2X
US	62/716,782		08/09/2018	BEAMFORMING AND GROUPING FOR NR V2X
WO	PCT/US2019/040688	WO 2020/033086	07/05/2019	BEAMFORMING AND GROUPING FOR NR V2X
CN	201980052982.X	CN112640346A	07/08/2019	Broadcast, Multicast, and Unicast on Sidelink for 5G EV2X
EP	19745482.0	3834321	07/08/2019	Broadcast, Multicast, and Unicast on Sidelink for 5G EV2X
US	17/265,254	US-2021-0306824	07/08/2019	Broadcast, Multicast, and Unicast on Sidelink for 5G EV2X
US	62/716,833		08/09/2018	Broadcast, Multicast and Unicast on Sidelink for 5G eV2X
WO	PCT/US19/040848	WO 2020/033089	07/08/2019	Broadcast, Multicast, and Unicast on Sidelink for 5G EV2X
CN	201980063345.2	CN 112753234 A	09/24/2019	3GPP PRIVATE LANS
EP	19784171.1	3847833	09/24/2019	3GPP PRIVATE LANS
IN	202117018653		09/24/2019	3GPP PRIVATE LANS
JP	2021-516957		09/24/2019	3GPP PRIVATE LANS
KR	10-2021-7012057		09/24/2019	3GPP PRIVATE LANS
US	17/279,682	US-2021-0400489	09/24/2019	3GPP PRIVATE LANS
US	62/737,276		09/27/2018	3GPP PRIVATE LANS
WO	PCT/US2019/052619	WO/2020/068765	09/24/2019	3GPP PRIVATE LANS
CN	202080027816.7	CN 113678423 A	03/13/2020	DYNAMIC NETWORK CAPABILITY CONFIGURATION
EP	20717055.6	3939239	03/13/2020	DYNAMIC NETWORK CAPABILITY CONFIGURATION
IN	202117045502		03/13/2020	DYNAMIC NETWORK CAPABILITY CONFIGURATION
JP	2021-555288		03/13/2020	DYNAMIC NETWORK CAPABILITY CONFIGURATION
KR	10-2021-7032930		03/13/2020	DYNAMIC NETWORK CAPABILITY CONFIGURATION
US	17/436,703		03/13/2020	DYNAMIC NETWORK CAPABILITY CONFIGURATION
US	62/817,811		03/13/2019	DYNAMIC NETWORK CAPABILITY CONFIGURATION
US	62/931,376		11/06/2019	DYNAMIC NETWORK CAPABILITY CONFIGURATION
WO	PCT/US2020/022573	WO/2020/186145	03/13/2020	DYNAMIC NETWORK CAPABILITY CONFIGURATION
US	62/734,516		09/21/2018	AUTONOMOUS UPLINK TRANSMISSION IN UNLICENSED NEW RADIO SPECTRUM
US	62/734,673		09/21/2018	BROADCAST, MULTICAST, AND UNICAST ON SIDELINK FOR 5G EV2X
US	62/736,807		09/26/2018	EFFICIENT BUFFER MANAGEMENT IN MULTI-HOPS DATA FORWARDING
CN	201980063015.3	CN 112753275 A	09/26/2019	NR-U LBT MAC PROCEDURES
EP	19784191.9	3841823	09/26/2019	NR-U LBT MAC PROCEDURES
IN	202117018650		09/26/2019	NR-U LBT MAC PROCEDURES



## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
JP	2021-517410		09/26/2019	NR-U LBT MAC PROCEDURES
KR	10-2021-7011883		09/26/2019	NR-U LBT MAC PROCEDURES
US	17/280,322	US-2022-0039016	09/26/2019	NR-U LBT MAC PROCEDURES
US	62/736,816		09/26/2018	NR-U LBT MAC PROCEDURES
WO	PCT/US2019/053135	WO/2020/069114	09/26/2019	NR-U LBT MAC PROCEDURES
CN	201980063414.X	CN 112771950 A	08/14/2019	Paging For UnLicensed New Radio
EP	19762516.3	3858004	08/14/2019	Paging For UnLicensed New Radio
IN	202117018654		08/14/2019	Paging For UnLicensed New Radio
JP	2021-516902		08/14/2019	Paging For UnLicensed New Radio
KR	10-2021-7011711		08/14/2019	Paging For UnLicensed New Radio
US	17/279,213	US-2022-0039061	08/14/2019	Paging For Unlicensed New Radio
US	62/736,850		09/26/2018	Paging For UnLicensed New Radio
WO	PCT/US19/046485	WO/2020/068290	08/14/2019	Paging For UnLicensed New Radio
CN	201980063416.9	CN112771962A	07/17/2019	Uu Based Sidelink Control for NR V2X
IN	202117018655		07/17/2019	Uu Based Sidelink Control for NR V2X
JP	2021-517308		07/17/2019	Uu Based Sidelink Control for NR V2X
KR	10-2021-7012470		07/17/2019	Uu Based Sidelink Control for NR V2X
US	17/279,173	US-2022-0007403	07/17/2019	Uu Based Sidelink Control for NR V2X
US	62/737,257		09/27/2018	Uu Based Sidelink Control for NR V2X
WO	PCT/US19/042237	WO/2020/068252	07/17/2019	Uu Based Sidelink Control for NR V2X
EP	19753213.8	3858024	07/17/2019	Uu Based Sidelink Control for NR V2X
CN	201980063605.6	CN 112997540 A	07/17/2019	Power Saving Mechanisms in NR
EP	19867298.2	3857990	07/17/2019	Power Saving Mechanisms in NR
US	17/279,198	US-2022-0039009	07/17/2019	Power Saving Mechanisms in NR
US	62/737,266		09/27/2018	Power Saving Mechanisms in NR
WO	PCT/US2019/042260	WO/2020/068253	07/17/2019	Power Saving Mechanisms in NR
US	62/737,643		09/27/2018	Beamforming and Grouping for NR V2X
CN	201980063367.9	CN112753265A	07/17/2019	SUB-BAND OPERATIONS IN UNLICENSED SPECTRUMS OF NEW RADIO
IN	202117016591		07/17/2019	SUB-BAND OPERATIONS IN UNLICENSED SPECTRUMS OF NEW RADIO
JP	2021-517411		07/17/2019	SUB-BAND OPERATIONS IN UNLICENSED SPECTRUMS OF NEW RADIO
KR	10-2021-7012085		07/17/2019	SUB-BAND OPERATIONS IN UNLICENSED SPECTRUMS OF NEW RADIO

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
US	17/275,702	US-2022-0039158	07/17/2019	SUB-BAND OPERATIONS IN UNLICENSED SPECTRUMS OF NEW RADIO
US	62/737,380		09/27/2018	SUB-BAND OPERATIONS IN UNLICENSED SPECTRUMS OF NEW RADIO
WO	PCT/US19/042163	WO/2020/068251	07/17/2019	SUB-BAND OPERATIONS IN UNLICENSED SPECTRUMS OF NEW RADIO
EP	19749056.8	3858023	07/17/2019	SUB-BAND OPERATIONS IN UNLICENSED SPECTRUMS OF NEW RADIO
US	62/741,792		10/05/2018	MULTICAST AND BROADCAST SERVICES IN 5G NETWORKS FOR IOT APPLICATIONS
US	62/737,648		09/27/2018	RESOURCE MANAGEMENT FOR 5G eV2X
US	17/295,589	US-2022-0022029	11/21/2019	METHODS TO LEVERAGE NON-CELLULAR DEVICE CAPABILITIES
US	62/772,258		11/28/2018	METHODS TO LEVERAGE NON-CELLULAR DEVICE CAPABILITIES
WO	PCT/US2019/062567	WO/2020/112480	11/21/2019	METHODS TO LEVERAGE NON-CELLULAR DEVICE CAPABILITIES
EP	19818458.2	3888331	11/21/2019	METHODS TO LEVERAGE NON-CELLULAR DEVICE CAPABILITIES
US	62/753,579		10/31/2018	NR-U LBT MAC Procedures
CN	201980072054.X	CN112970205A	10/31/2019	Beam Failure Recovery On A Non-Failed Cell
EP	19809255.3	3874612	10/31/2019	Beam Failure Recovery On A Non-Failed Cell
IN	202117022468	202117022468 A	10/31/2019	Beam Failure Recovery On A Non-Failed Cell
JP	.2021-523880		10/31/2019	Beam Failure Recovery On A Non-Failed Cell
KR	10-2021-7016205		10/31/2019	BEAM FAILURE RECOVERY ON A NON-FAILED CELL
US	17/289,051	US-2021-0409091	10/31/2019	BEAM FAILURE RECOVERY ON A NON-FAILED CELL
US	62/753,995		11/01/2018	Beam Failed Recovery On A Non-Failed Cell
WO	PCT/US2019/059137	WO/2020/092752	10/31/2019	Beam Failure Recovery On A Non-Failed Cell
US	62/754,159		11/01/2018	SUB-BAND OPERATIONS IN UNLICENSED SPECTRUMS OF NEW RADIO
US	62/754,326		11/01/2018	Uu Based Sidelink Control for NR V2X
CN	201980071801.8	CN 113039819 A	10/31/2019	NEW RADIO VEHICLE SIDELINK DISCOVERY
EP	19809254.6	3874777	10/31/2019	NEW RADIO VEHICLE SIDELINK DISCOVERY
IN	202117023106	202117023106 A	10/31/2019	NEW RADIO VEHICLE SIDELINK DISCOVERY
JP	2021-523868		10/31/2019	NEW RADIO VEHICLE SIDELINK DISCOVERY
KR	10-2021-7015962		10/31/2019	NEW RADIO VEHICLE SIDELINK DISCOVERY
US	17/289,802	US-2021-0400448	10/31/2019	NEW RADIO VEHICLE SIDELINK DISCOVERY

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
US	62/753,757		10/31/2018	NEW RADIO VEHICLE SIDELINK DISCOVERY
WO	PCT/US2019/059123	WO/2020/092742	10/31/2019	NEW RADIO VEHICLE SIDELINK DISCOVERY
US	62/754,385		11/01/2018	Beamforming and grouping for NR V2X
CN	201980073340.8	CN112997546A	09/11/2019	Sidelink Transmit Power Control For New Radio V2X
EP	19774028.5		09/11/2019	Sidelink Transmit Power Control For New Radio V2X
US	17/291,644	US-2021-0410084	09/11/2019	Sidelink Transmit Power Control For New Radio V2X
US	62/757,431		11/08/2018	SIDELINK TRANSMIT POWER CONTROL FOR NEW RADIO V2X
WO	PCT/US2019/050596	WO/2020/096693	09/11/2019	Sidelink Transmit Power Control For New Radio V2X
CN	202080008616.7	CN113302956A	01/10/2020	USER EQUIPMENT AND BASE STATION FOR MANAGING BEAM FAILURE DETECTION
EP	20703665.8	3909274	01/10/2020	USER EQUIPMENT AND BASE STATION FOR MANAGING BEAM FAILURE DETECTION
IN	202117035151	202117035151 A	01/10/2020	USER EQUIPMENT AND BASE STATION FOR MANAGING BEAM FAILURE DETECTION
JP	2021-540130		01/10/2020	USER EQUIPMENT AND BASE STATION FOR MANAGING BEAM FAILURE DETECTION
KR	10-2021-7025166		01/10/2020	USER EQUIPMENT AND BASE STATION FOR MANAGING BEAM FAILURE DETECTION
US	17/421,853		01/10/2020	USER EQUIPMENT AND BASE STATION FOR MANAGING BEAM FAILURE DETECTION
US	62/790,952		01/10/2019	APPARATUS, SYSTEM, COMPUTER PROGRAM PRODUCT AND METHOD OF MANAGING BEAM FAILURE DETECTION
WO	PCT/US2020/013091	WO 2020/146737	01/10/2020	USER EQUIPMENT AND BASE STATION FOR MANAGING BEAM FAILURE DETECTION
US	62/790,754		01/10/2019	Beamforming and Grouping for NR V2X
US	62/791,055		01/11/2019	Beamforming and Grouping for NR V2X
US	62/790,539		01/10/2019	Channel Access Indication for Spectral Reuse, Power Savings and Coexistence
US	62/790,731		01/10/2019	RESOURCE MANAGEMENT FOR 5G eV2X
CN	202080014447.8	CN113475158A	02/13/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR CONNECTION-ORIENTED VEHICLE-TO-X (VTX) COMMUNICATION IN 5G
IN	202117040579		02/13/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR CONNECTION-ORIENTED VEHICLE-TO-X (VTX) COMMUNICATION IN 5G

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
JP	2021-547393		02/13/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR CONNECTION-ORIENTED VEHICLE-TO-X (VTX) COMMUNICATION IN 5G
KR	10-2021-7029382		02/13/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR CONNECTION-ORIENTED VEHICLE-TO-X (VTX) COMMUNICATION IN 5G
US	17/429,837		02/13/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR CONNECTION-ORIENTED VEHICLE-TO-X (VTX) COMMUNICATION IN 5G
US	62/805,121		02/13/2019	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR CONNECTION-ORIENTED VEHICLE-TO-X (VTX) COMMUNICATION IN 5G
WO	PCT/US2020/018114	WO 2020/168080	02/13/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR CONNECTION-ORIENTED VEHICLE-TO-X (VTX) COMMUNICATION IN 5G
EP	20713786.0	3925394	02/13/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR CONNECTION-ORIENTED VEHICLE-TO-X (VTX) COMMUNICATION IN 5G
US	62/805,027		02/13/2019	NEW RADIO VEHICLE SIDELINK DISCOVERY
CN	202080014277.3	CN 113424626 A	02/14/2020	INTRA-UE PRIORITIZATION IN UPLINK TRANSMISSIONS
EP	20714336.3	3909356	02/14/2020	INTRA-UE PRIORITIZATION IN UPLINK TRANSMISSIONS
IN	202117040581		02/14/2020	INTRA-UE PRIORITIZATION IN UPLINK TRANSMISSIONS
JP	2021-547451		02/14/2020	INTRA-UE PRIORITIZATION IN UPLINK TRANSMISSIONS
KR	10-2021-7029642		02/14/2020	INTRA-UE PRIORITIZATION IN UPLINK TRANSMISSIONS
US	17/429,689		02/14/2020	INTRA-UE PRIORITIZATION IN UPLINK TRANSMISSIONS
US	62/805,614		02/14/2019	INTRA-UE PRIORITIZATION IN UPLINK TRANSMISSIONS
WO	PCT/US2020/018333	WO 2020/168223	02/14/2020	INTRA-UE PRIORITIZATION IN UPLINK TRANSMISSIONS
CN	202080025014.2	CN113678555A	02/05/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR PERFORMING CONTROL TO HANDLE INTER-UE PRIORITIZATION FOR NR V2X
EP	20709888.0	3949616	02/05/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR PERFORMING CONTROL TO HANDLE INTER-UE PRIORITIZATION FOR NR V2X

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
US	17/441,757		02/05/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR PERFORMING CONTROL TO HANDLE INTER-UE PRIORITIZATION FOR NR V2X
US	62/825,374		03/28/2019	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR PERFORMING CONTROL TO HANDLE PREEMPTION OF A SIDELINK TRANSMISSION
WO	PCT/US2020/016823	WO/2020197645	02/05/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR PERFORMING CONTROL TO HANDLE INTER-UE PRIORITIZATION FOR NR V2X
CN	202080024952.0	CN113647154A	03/27/2020	DRX CONFIGURATION IN NEW RADIO
IN	202117048020		03/27/2020	DRX CONFIGURATION IN NEW RADIO
JP	PCT/US2020/025233		03/27/2020	DRX CONFIGURATION IN NEW RADIO
KR	10-2021-7034739		03/27/2020	DRX CONFIGURATION IN NEW RADIO
US	17/442,728		03/27/2020	DRX CONFIGURATION IN NEW RADIO
US	62/824,702		03/27/2019	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR PERFORMING USER EQUIPMENT (UE) POWER SAVINGS IN NEW RADIO (NR) APPLICATIONS
WO	PCT/US2020/025233	WO 2020/198594	03/27/2020	DRX CONFIGURATION IN NEW RADIO
EP	20721017.0	3949544	03/27/2020	DRX CONFIGURATION IN NEW RADIO
US	62/825,226		03/28/2019	Power Saving Mechanisms in NR
US	62/824,701		03/27/2019	Intra-UE prioritization in Uplink and Downlink Transmissions
CN	202080025436.X	CN 113678393 A	03/27/2020	APPARATUS FOR PERFORMING MULTI-PANEL TRANSMISSION FOR NEW RADIO VEHICLE TO EVERYTHING
US	17/441,785		03/27/2020	APPARATUS FOR PERFORMING MULTI-PANEL TRANSMISSION FOR NEW RADIO VEHICLE TO EVERYTHING
US	62/825,408		03/28/2019	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR PERFORMING MULTI-PANEL TRANSMISSION AND SIDELINK REFERENCE SIGNALING (RS) FOR NEW RADIO (NR) VEHICLE TO EVERYTHING (V2X)
WO	PCT/US2020/025304	WO 2020/198616	03/27/2020	APPARATUS FOR PERFORMING MULTI-PANEL TRANSMISSION FOR NEW RADIO VEHICLE TO EVERYTHING

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
EP	20721900.7	3949460	03/27/2020	Apparatus, System, Method and Computer-Readable Medium for Performing Multi-Panel Transmission and Sidelink Reference Signaling (RS) for New Radio (NR) Vehicle to Everything (V2X)
US	62/827,611		04/01/2019	Configuration and Control Signaling for NR-V2X
CN	202080029787.8	CN113728664A	04/28/2020	ELECTRONIC DEVICE AND METHODS FOR PERFORMING DATA AGGREGATION IN A 5G USER EQUIPMENT
EP	20725395.6	3954141	04/28/2020	ELECTRONIC DEVICE AND METHODS FOR PERFORMING DATA AGGREGATION IN A 5G USER EQUIPMENT
US	17/606,783		04/28/2020	ELECTRONIC DEVICE AND METHODS FOR PERFORMING DATA AGGREGATION IN A 5G USER EQUIPMENT
US	62/840,811		04/30/2019	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR PERFORMING DATA AGGREGATION IN 5G USER EQUIPMENT
WO	PCT/US2020/030243	WO/2020/223219	04/28/2020	ELECTRONIC DEVICE AND METHODS FOR PERFORMING DATA AGGREGATION IN A 5G USER EQUIPMENT
CN	202080029697.9	CN 113748619 A	05/01/2020	METHODS FOR A MULTI-HOP RELAY IN 5G NETWORK
EP	20730152.4		05/01/2020	METHODS FOR A MULTI-HOP RELAY IN 5G NETWORK
US	17/607,229		05/01/2020	METHODS FOR A MULTI-HOP RELAY IN 5G NETWORK
US	62/841,455		05/01/2019	METHODS FOR A MULTI-HOP RELAY IN 5G NETWORK
WO	PCT/US2020/031019	WO 2020/223629	05/01/2020	METHODS FOR A MULTI-HOP RELAY IN 5G NETWORK
US	62/841,579		05/01/2019	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR CONNECTION-ORIENTED VEHICLE-TO-X (VTX) COMMUNICATION IN 5G
CN	PCT/US2020/036343		06/05/2020	PERFORMING SERVICE DELIVERY FOR MULTI-USER MOBILE TERMINALS CROSS-REFERENCE TO RELATED APPLICATION
EP	20751326.8		06/05/2020	PERFORMING SERVICE DELIVERY FOR MULTI-USER MOBILE TERMINALS CROSS-REFERENCE TO RELATED APPLICATION
JP	2021-572664		06/05/2020	PERFORMING SERVICE DELIVERY FOR MULTI-USER MOBILE TERMINALS CROSS-REFERENCE TO RELATED APPLICATION

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Country	Application No.	Patent or Publication No.	Filing Date	Title
US	17/617,172		06/05/2020	PERFORMING SERVICE DELIVERY FOR MULTI-USER MOBILE TERMINALS CROSS-REFERENCE TO RELATED APPLICATION
US	62/858,565		06/07/2019	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR PERFORMING SERVICE DELIVERY FOR MULTI-USER MOBILE TERMINALS
WO	PCT/US2020/036343		06/05/2020	PERFORMING SERVICE DELIVERY FOR MULTI-USER MOBILE TERMINALS CROSS-REFERENCE TO RELATED APPLICATION
CN	PCT/US2020/024442		03/24/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR CELLULAR SYSTEM ENHANCEMENTS FOR THE SUPPORT OF MULTI-SIM USER EQUIPMENTS
EP	20720219.3		03/24/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR CELLULAR SYSTEM ENHANCEMENTS FOR THE SUPPORT OF MULTI-SIM USER EQUIPMENTS
IN	202117062176		03/24/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR CELLULAR SYSTEM ENHANCEMENTS FOR THE SUPPORT OF MULTI-SIM USER EQUIPMENTS
JP	2021-572527		03/24/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR CELLULAR SYSTEM ENHANCEMENTS FOR THE SUPPORT OF MULTI-SIM USER EQUIPMENTS
KR	10-2022-7000171		03/24/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR CELLULAR SYSTEM ENHANCEMENTS FOR THE SUPPORT OF MULTI-SIM USER EQUIPMENTS
US	17/617,033		03/24/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR CELLULAR SYSTEM ENHANCEMENTS FOR THE SUPPORT OF MULTI-SIM USER EQUIPMENTS
US	62/858,747		06/07/2019	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR PERFORMING REGISTRATION OF 5G MULTI SIM USER EQUIPMENT
US	62/928,379		10/31/2019	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR CELLULAR SYSTEM ENHANCEMENTS FOR THE SUPPORT OF MULTI-SIM USER EQUIPMENTS
WO	PCT/US2020/024442	WO2020/247043	03/24/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR CELLULAR SYSTEM ENHANCEMENTS FOR THE SUPPORT OF MULTI-SIM USER EQUIPMENTS

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
CN	PCT/US2020/039579		06/25/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR PERFORMING BEAM FAILURE RECOVERY
EP	20740765.1		06/25/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR PERFORMING BEAM FAILURE RECOVERY
US	17/621,351		06/25/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR PERFORMING BEAM FAILURE RECOVERY
US	62/868,588		06/28/2019	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR PERFORMING BEAM FAILURE RECOVERY
WO	PCT/US2020/039579		06/25/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR PERFORMING BEAM FAILURE RECOVERY
CN	PCT/US2020/044830		08/04/2020	APPARATUS, SYSTEM AND METHOD FOR PERFORMING TWO-STEP RACH
EP	20760663.3		08/04/2020	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR PERFORMING TWO-STEP RACH
US	17/628,748		08/04/2020	APPARATUS, SYSTEM AND METHOD FOR PERFORMING TWO-STEP RACH
US	62/882,565		09/04/2019	APPARATUS, SYSTEM AND METHOD FOR PERFORMING TWO-STEP RACH
WO	PCT/US2020/044830		08/04/2020	APPARATUS, SYSTEM AND METHOD FOR PERFORMING TWO-STEP RACH
US	62/886,689		08/14/2019	Apparatus, System, Method, and Computer-Readable Medium for Performing User Equipment (UE) Power Savings in New Radio (NR) Applications
CN	PCT/US2020/046052		08/13/2020	NR SIDELINK GROUP COMMUNICATION
EP	PCT/US2020/046052		08/13/2020	NR SIDELINK GROUP COMMUNICATION
US	17/628,761		08/13/2020	NR SIDELINK GROUP COMMUNICATION
US	62/886,622		08/14/2019	NR Sidelink Group Communication
WO	PCT/US2020/046052	WO/2021/030520	08/13/2020	NR SIDELINK GROUP COMMUNICATION
CN	PCT/US2020/046270		08/14/2020	CHANNEL ACCESS FOR UNLICENSED SPECTRUM IN MMW OPERATION
EP	PCT/US2020/046270		08/14/2020	CHANNEL ACCESS FOR UNLICENSED SPECTRUM IN MMW OPERATION
US	17/632,331		08/14/2020	CHANNEL ACCESS FOR UNLICENSED SPECTRUM IN MMW OPERATION



## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
US	62/888,044		08/16/2019	CHANNEL ACCESS FOR UNLICENSED SPECTRUM IN MMW OPERATION
WO	PCT/US2020/046270	WO 2021/034628	08/14/2020	CHANNEL ACCESS FOR UNLICENSED SPECTRUM IN MMW OPERATION
CN	PCT/US2020/045972		08/12/2020	BEAM MANAGEMENT FOR NEW RADIO VEHICLE COMMUNICATIONS
EP	PCT/US2020/045972		08/12/2020	BEAM MANAGEMENT FOR NEW RADIO VEHICLE COMMUNICATIONS
US	17/632,360		08/12/2020	BEAM MANAGEMENT FOR NEW RADIO VEHICLE COMMUNICATIONS
US	62/888,002		08/16/2019	Beam Management for New Radio Vehicle Communications
WO	PCT/US2020/045972	WO/2021/034572	08/12/2020	BEAM MANAGEMENT FOR NEW RADIO VEHICLE COMMUNICATIONS
CN	PCT/US2020/046383		08/14/2020	BEAM FAILURE DETECTION AND RECOVERY WITH MULTI-TRP AND MULTI-PANEL TRANSMISSION
EP	PCT/US2020/046383		08/14/2020	BEAM FAILURE DETECTION AND RECOVERY WITH MULTI-TRP AND MULTI-PANEL TRANSMISSION
IN	PCT/US2020/046383		08/14/2020	BEAM FAILURE DETECTION AND RECOVERY WITH MULTI-TRP AND MULTI-PANEL TRANSMISSION
JP	PCT/US2020/046383		08/14/2020	BEAM FAILURE DETECTION AND RECOVERY WITH MULTI-TRP AND MULTI-PANEL TRANSMISSION
KR	PCT/US2020/046383		08/14/2020	BEAM FAILURE DETECTION AND RECOVERY WITH MULTI-TRP AND MULTI-PANEL TRANSMISSION
US	62/887,917		08/16/2019	BEAM FAILURE DETECTION AND RECOVERY WITH MULTI-TRP AND MULTI-PANEL TRANSMISSION
US	PCT/US2020/046383		08/14/2020	BEAM FAILURE DETECTION AND RECOVERY WITH MULTI-TRP AND MULTI-PANEL TRANSMISSION
WO	PCT/US2020/046383	WO 2021/034672	08/14/2020	BEAM FAILURE DETECTION AND RECOVERY WITH MULTI-TRP AND MULTI-PANEL TRANSMISSION
CN	PCT/US2020/048123		08/27/2020	NR V2X MOBILITY
EP	PCT/US2020/048123		08/27/2020	NR V2X MOBILITY
US	62/892,327		08/27/2019	NR V2X MOBILITY
US	PCT/US2020/048123		08/27/2020	NR V2X MOBILITY
WO	PCT/US2020/048123	WO/2021/041619	08/27/2020	NR V2X MOBILITY
US	62/896,669		09/06/2019	Path Switch in 5G Network
WO	PCT/US2020/044744	WO 2021/045859	08/03/2020	PATH SELECTION OR PATH SWITCHING AND CHARGING FOR PROXIMITY SERVICE COMMUNICATION

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
US	62/899,202		09/12/2019	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR PERFORMING SERVICE DELIVERY AND QOS FOR MULTI-USER MOBILE TERMINALS
US	62/899,322		09/12/2019	APPARATUS, SYSTEM, METHOD, AND COMPUTER-READABLE MEDIUM FOR CELLULAR SYSTEM ENHANCEMENTS FOR THE SUPPORT OF MULTI-SIM USER EQUIPMENTS
US	62/905,712		09/25/2019	FRAME BASED EQUIPMENT (FBE) IN NR-U
WO	PCT/US2020/052670	WO/2021/062118	09/25/2020	FRAME BASED EQUIPMENT (FBE) IN NR-U
US	62/909,993		10/03/2019	UE Power Savings in Multi-beam Operations
WO	PCT/US2020/053934	WO 2021/067690	10/02/2020	UE POWER SAVINGS IN MULTI-BEAM OPERATION
US	62/910,677		10/04/2019	FRAME BASED EQUIPMENT AND LOAD BASED EQUIPMENT MODES SWITCHING IN UNREGULATED NEW RADIO
WO	PCT/US2020/053969	WO 2021/067719	10/02/2020	FRAME BASED EQUIPMENT AND LOAD BASED EQUIPMENT MODES SWITCHING IN UNREGULATED NEW RADIO
US	62/933,824		11/11/2019	LINK RECOVERY WITH SIDELINK BEAMFORMING
WO	PCT/US2020/060041		11/11/2020	LINK RECOVERY WITH SIDELINK BEAMFORMING
US	62/934,748		11/13/2019	METHODS FOR MULTI-SIM UE CONNECTED MODE OPERATION
WO	PCT/US2020/060444	WO/2021/097231	11/13/2020	METHODS FOR MULTI-SIM UE CONNECTED MODE OPERATION
US	62/934,733		11/13/2019	METHODS FOR MULTI-SIM UE CELL SELECTION AND RESELECTION
WO	PCT/US2020/060221	WO/2021/097082	11/12/2020	METHODS FOR MULTI-SIM UE CELL SELECTION AND RESELECTION
US	62943896		12/05/2019	System Information Acquisition and Paging for User Equipment with Multiple Universal Subscriber Identity Modules
US	63/061,414		08/05/2020	System Information Acquisition and Paging for User Equipment with Multiple Universal Subscriber Identity Modules
WO	PCT/US2020/063219	WO/2021/113581	12/04/2020	SYSTEM INFORMATION ACQUISITION AND PAGIN FOR USER EQUIPMENT WITH MULTIPLE UNIVERSAL SUBSCRIBER IDENTITY MODULES
US	62/947,606		12/13/2019	Path Switching and Charging for D2D Communications in the 5G Network
US	63/006,741		04/08/2020	Path Switching and Charging for D2D Communications in the 5G Network

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
US	62/947,906		12/31/2019	NR Sidelink Discontinuous Reception
WO	PCT/US2020/064582	WO 2021/119474	12/11/2020	NR SIDELINK DISCONTINUOUS RECEPTION
US	62/950,265		12/19/2019	PAGING REMOTE UE
WO	PCT/US2020/066081	WO/2021/127485	12/18/2020	PAGING REMOTE UE
US	62/955,506		12/31/2019	EDGE SERVICES CONFIGURATION
US	63/018,582		05/01/2020	EDGE SERVICES CONFIGURATION
WO	PCT/US2020/065702	WO/2021/138069	12/17/2020	EDGE SERVICES CONFIGURATION
US	62/956441		01/02/2020	FREQUENCY RANGE DRIVEN NETWORK SLICING
US	62/972212		02/10/2020	FREQUENCY RANGE DRIVEN NETWORK SLICING
US	63/057,996		07/29/2020	FREQUENCY RANGE DRIVEN NETWORK SLICING
WO	PCT/US2020/067613	WO 2021/138526	12/31/2020	FREQUENCY RANGE DRIVEN NETWORK SLICING
US	62/975,858		02/13/2020	METHODS OF DELIVERY MODE SWITCH FOR MULTICAST AND BROADCAST SERVICE IN 5G NETWORK
WO	PCT/US2021/017563	WO/2021/163260	02/11/2021	METHODS OF DELIVERY MODE SWITCH FOR MULTICAST AND BROADCAST SERVICE IN 5G NETWORK
US	62/992,366		03/20/2020	COVERAGE ENHANCEMENT FOR REDUCED CAPABILITY NEW RADIO DEVICES
WO	PCT/US2021/023152	WO 2021/188893	03/19/2021	COVERAGE ENHANCEMENT FOR REDUCED CAPABILITY NEW RADIO DEVICES
US	62/994,916		03/26/2020	SNPN ONBOARDING AND OBTAINING SNPN SERVICES FROM A PLMN
US	63/057,920		07/29/2020	SNPN ONBOARDING AND OBTAINING SNPN SERVICES FROM A PLMN
WO	PCT/US2021/023665	WO/2021/195075	03/23/2021	SNPN ONBOARDING AND OBTAINING SNPN SERVICES FROM A PLMN
US	63/001,619		03/30/2020	CHANNEL ACCESS FOR NR IN 52.6-71 GHZ
WO	PCT/US2021/024619	WO/2021/202357	03/29/2021	CHANNEL ACCESS FOR NR IN 52.6-71 GHZ
US	63/008,244		04/10/2020	SIDELINK ENHANCEMENTS - RESOURCE ALLOCATION ASSISTANCE INFORMATION
WO	PCT/US2021/026328	WO/2021/207459	04/08/2021	SIDELINK ENHANCEMENTS - RESOURCE ALLOCATION ASSISTANCE INFORMATION
US	63/007,174		04/08/2020	SIDELINK ENHANCEMENTS - RESOURCE ALLOCATION SIMULTANEOUS MODE 1/MODE 2
WO	PCT/US2021/026337	WO/2021/207464	04/08/2021	SIDELINK ENHANCEMENTS - RESOURCE ALLOCATION SIMULTANEOUS MODE 1/MODE 2
US	63/027,413		05/20/2020	SIDELINK RELAY CONNECTIVITY MANAGEMENT

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
WO	PCT/US2021/033337	WO/2021/236894	05/20/2021	SIDELINK RELAY CONNECTIVITY MANAGEMENT
US	63/024,720		05/14/2020	MECHANISM OF SCHEDULING FOR BROADCAST AND GROUPCAST ON NEW RADIO UU INTERFACE
US	63/170,735		04/05/2021	MECHANISM OF SCHEDULING FOR BROADCAST AND GROUPCAST ON NEW RADIO UU INTERFACE
WO	PCT/US2021/032407	WO/2021/231835	05/14/2021	MECHANISM OF SCHEDULING FOR BROADCAST AND GROUPCAST ON NEW RADIO UU INTERFACE
US	63/024,768		05/14/2020	Synchronization Signal Block Scheme and Acquisition
WO	PCT/US2021/032380	WO/2021/231820	05/14/2021	Synchronization Signal Block Scheme and Acquisition
US	63/026,904		05/19/2020	Sidelink Adaptation Protocol for Remote UE connectivity
US	63/094,485		10/21/2020	Sidelink Adaptation Protocol for Remote UE connectivity
WO	PCT/US2021/033179	WO/2021/236786	05/19/2021	SIDELINK ADAPTATION PROTOCOL FOR REMOTE UE CONNECTIVITY
US	63/041796		06/19/2020	SI ACQUISITION AND PAGING FOR REDUCED CAPABILITY NR DEVICES
WO	PCT/US2021/038057	WO/2021/257971	06/18/2021	SI ACQUISITION AND PAGING FOR REDUCED CAPABILITY NR DEVICES
US	63/048,854		07/07/2020	Channelization and LBT for NR unlicensed band from 52.6 GHz and above
WO	PCT/US2021/040671	WO/2022/011000	07/07/2021	Channelization and LBT for NR unlicensed band from 52.6 GHz and above
US	63/058570		07/30/2020	User Plane Optimizations using Network Data Analytics
US	63/147,284		02/09/2021	User Plane Optimizations using Network Data Analytics
WO	PCT/US2021/043337	WO/2022/026482	07/27/2021	USER PLANE OPTIMIZATIONS USING NETWORK DATA ANALYTICS
US	63/061,658		08/05/2020	5G Multicast-Broadcast Services (MBS) Scheduling and Bearer Management
US	63/094,685		10/21/2020	5G Multicast-Broadcast Services (MBS) Scheduling and Bearer Management
WO	PCT/US2021/044791		08/05/2021	5G MULTICAST-BROADCAST SERVICES (MBS) SCHEDULING AND BEARER MANAGEMENT
US	63/061,764		08/05/2020	5G Multicast-Broadcast Services (MBS) Radio Access Network Architecture and Operation
US	63/168,515		03/31/2021	5G Multicast-Broadcast Services (MBS) Radio Access Network Architecture and Operation
WO	PCT/US2021/044652		08/05/2021	5G MULTICAST-BROADCAST SERVICES (MBS) RADIO ACCESS NETWORK ARCHITECTURE AND OPERATION

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Country	Application No.	Patent or Publication No.	Filing Date	Title
US	63/062,704		08/07/2020	Multi-Carrier Based New Radio Vehicle Communications with Sidelink
WO	PCT/US2021/044871		08/06/2021	MULTI-CARRIER BASED NEW RADIO VEHICLE COMMUNICATIONS WITH SIDELINK
US	63/062,661		08/07/2020	Beam-based Channel Access Methods and Systems for Supporting New Radio above 52.6 GHz
WO	PCT/US2021/044776		08/05/2021	Beam-based Channel Access Methods and Systems for Supporting New Radio above 52.6 GHz
US	63/091,990		10/15/2020	MBS FOR RRC IDLE INACTIVE ON NEW RADIO UU INTERFACE
US	63/185,481		05/07/2021	MBS FOR RRC IDLE INACTIVE ON NEW RADIO UU INTERFACE
US	63/229,613		08/05/2021	MBS FOR RRC IDLE INACTIVE ON NEW RADIO UU INTERFACE
US	63/250,328		09/30/2021	MULTICAST/BROADCAST SERVICE FOR RADIO RESOURCE CONTROL IDLE/INACTIVE USER EQUIPMENT ON NEW RADIO UU INTERFACE
WO	PCT/US2021/055138		10/15/2021	MULTICAST/BROADCAST SERVICE FOR RADIO RESOURCE CONTROL IDLE/INACTIVE USER EQUIPMENT ON NEW RADIO UU INTERFACE
US	63/091608		10/14/2020	Paging Enhancements for UE Power Savings
WO	PCT/US2021/054964		10/14/2021	PAGING ENHANCEMENTS FOR UE POWER SAVINGS
US	63/092,059		10/15/2020	Methods and Systems of LBT Adaptation and Beam Operation with Interference Handling for supporting NR above 52.6 GHz
US	63/261,886		09/30/2021	Methods and Systems of LBT Adaptation and Beam Operation with Interference Handling for supporting NR above 52.6 GHz
WO	PCT/US2021/055206		10/15/2021	METHODS AND SYSTEMS OF LBT ADAPTATION AND BEAM OPERATION WITH INTERFERENCE HANDLING FOR SUPPORTING NR ABOVE 52.6 GHZ
US	63/094,606		10/21/2020	Cast Type and Coordination Based Inter-UE Operation for NR Sidelink
WO	PCT/US2021/055815		10/20/2021	Cast Type and Coordination Based Inter-UE Operation for NR Sidelink
US	63/094,537		10/21/2020	5G Multicast-Broadcast Services (MBS) Mobility and Service Continuity
WO	PCT/US2021/056033		10/21/2021	Multicast-Broadcast Services Mobility and Service Continuity
US	63/094,442		10/21/2020	Methods and Apparatus for Remote UE Mobility Management

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
WO	PCT/US2021/056019		10/21/2021	Methods and Apparatus for Remote UE Mobility Management
US	63/104,179		10/22/2020	Beam Management Enhancements
WO	PCT/US2021/056224		10/22/2021	Beam Management Enhancements
US	63/108,957		11/03/2020	Methods for the Communication of Adaptive Traffic Steering
US	63/183,657		05/04/2021	COMMUNICATION OF ADAPTIVE TRAFFIC STEERING
WO	PCT/US2021/057818		11/03/2021	Communication of Adaptive Traffic Steering
US	63/118,110		11/25/2020	Enhancement to Redundant Transmission in 5G Network
WO	PCT/US2021/060761		11/24/2021	Enhancement to Redundant Transmission in 5G Network
US	63/118,250		11/25/2020	Fast QoS Rule changes for High priority MO Data
WO	PCT/US2021/060767		11/24/2021	Fast QoS Rule changes for High priority MO Data
US	63/119,180		11/30/2020	MINIMIZATION OF SERVICE INTERRUPTION
US	63/147,786		02/10/2021	MINIMIZATION OF SERVICE INTERRUPTION
US	63/229,635		08/05/2021	MINIMIZATION OF SERVICE INTERRUPTION
WO	PCT/US2021/061073		11/30/2021	MINIMIZATION OF SERVICE INTERRUPTION
US	63/136,232		01/12/2021	New Radio Device support for Non-Terrestrial Networks in Idle Mode and RRC Inactive State
US	63/168,441		03/31/2021	New Radio Device support for Non-Terrestrial Networks in Idle Mode and RRC Inactive State
US	63/185,777		05/07/2021	NEW RADIO DEVICE SUPPORT FOR NON-TERRESTRIAL NETWORKS IN IDLE MODE AND IN RRC INACTIVE STATE
WO	PCT/US2022/012086		01/12/2022	New Radio Device support for Non-Terrestrial Networks in Idle Mode and RRC Inactive State
US	63/148,842		02/12/2021	Enhancements for Edge Network Access for a UE
US	63/230,095		08/06/2021	ENHANCEMENTS FOR EDGE NETWORK ACCESS FOR A UE
US	63/166,583		03/26/2021	Method of Configuring PC5 DRX Operation in 5G Network
US	63/168,369		03/31/2021	New Radio positioning reference signal enhancements
US	63/185,642		05/07/2021	New Radio positioning reference signal enhancements
US	63/168,710		03/31/2021	5G Multicast-Broadcast Services (MBS): Multiplexing and Reliability
US	63/185,726		05/07/2021	5G Multicast-Broadcast Services (MBS): Multiplexing and Reliability, and power savings
US	63/168,707		03/31/2021	Activation/de-activation mechanism for one SCG and Scells, and Conditional PSCell change/addition

## Confirmatory Patent Assignment: Convida Wireless, LLC to InterDigital Patent Holdings, Inc.

Country	Application No.	Patent or Publication No.	Filing Date	Title
US	63/185,890		05/07/2021	Activation/de-activation mechanism for one SCG and Scells, and Conditional PSCell change/addition
US	63/168,845		03/31/2021	Methods and Procedures for NR Sidelink Discontinuous Reception
US	63/185,872		05/07/2021	Methods and Procedures for NR Sidelink Discontinuous Reception
US	63/168,547		03/31/2021	Methods and Apparatus for Dynamic User Plane Management
US	63/170,968		04/05/2021	Beam Management and Bandwidth Part Operation for Non-Terrestrial Networks
US	63/203,968		08/05/2021	Beam Management and Bandwidth Part Operation for Non-Terrestrial Networks
US	63/170,798		04/05/2021	Enhancements for TCI Activation and Application in Common TCI Operation
US	63/170,703		04/05/2021	New Radio Sidelink Sensing
US	63/185,493		05/07/2021	Methods of Group Paging for Signal Efficiency in 5G Network
US	63/184,840		05/06/2021	REDUCED CAPACITY UEs and 5TH GENERATION CORE NETWORK INTERACTIONS
US	63/186,558		05/10/2021	METHODS AND SYSTEMS OF NR SIDELINK RESOURCE ALLOCATION FOR POWER SAVING AND BWP OPERATIONS
US	63/229,736		08/05/2021	METHODS AND SYSTEMS OF NR SIDELINK RESOURCE ALLOCATION FOR POWER SAVING AND BWP OPERATIONS
US	63/229,795		08/05/2021	NR SL ENHANCEMENT IN UNLICENSED SPECTRUM
US	63/236,748		08/25/2021	AUTHORIZATION, CREATION, AND MANAGEMENT OF PERSONAL NETWORKS
US	63/245,656		09/17/2021	Application Interaction for Network Slicing
US	63/246,485		09/21/2021	Architecture Enhancements for Network Slicing
US	63/254,418		10/11/2021	METHODS AND SYSTEMS FOR DATA FLOW COORDINATION IN MULTI-MODAL COMMUNICATIONS
US	63/271,435		10/25/2021	Methods and Systems for NR SL Positioning
US	63/275,084		11/03/2021	Enhancements for Interaction between the Session Management and Mobility Management Layers
US	63/275,995		11/05/2021	NR Security Enhancements
US	63/276,762		11/08/2021	CSI and SRS Update Upon TCI Activation
US	63/276,874		11/08/2021	Methods and Procedures for Synchronization Enhancement in NR NTN

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<b>Country</b>	<b>Application No.</b>	<b>Patent or Publication No.</b>	<b>Filing Date</b>	<b>Title</b>
US	63/278,772		11/12/2021	5G Support for AI/ML Communications
US	63/279,730		11/16/2021	NEW RADIO SIDELINK OPERATION OVER SHARED SPECTRUM
US	63/264,125		11/16/2021	Methods and Procedures for NR Sidelink Resource Allocation Over Shared Spectrum