

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT8216218

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	EXCLUSIVE LICENSE WITH ALL SUBSTANTIAL RIGHT
CONVEYING PARTY DATA	
Name	Execution Date
KT CORPORATION	12/23/2022
RECEIVING PARTY DATA	
Name:	PEGASUS WIRELESS INNOVATION LLC
Street Address:	20319 KIAWAH ISLAND DR
City:	ASHBURN
State/Country:	VIRGINIA
Postal Code:	20147
PROPERTY NUMBERS Total: 92	
Property Type	Number
Patent Number:	9894644
Patent Number:	9998269
Patent Number:	10181931
Patent Number:	10306546
Patent Number:	10341806
Patent Number:	10728693
Patent Number:	10085249
Patent Number:	10568071
Patent Number:	11082957
Patent Number:	10432361
Patent Number:	10742364
Patent Number:	10644819
Patent Number:	10412731
Patent Number:	10616889
Patent Number:	10581560
Patent Number:	11197309
Patent Number:	10892867
Patent Number:	11431460
Patent Number:	11431461
Patent Number:	11115976

Property Type	Number
Patent Number:	10849111
Patent Number:	11330573
Patent Number:	10237084
Patent Number:	10735967
Patent Number:	10708893
Patent Number:	9713094
Patent Number:	10178626
Patent Number:	10091736
Patent Number:	9461771
Patent Number:	9629010
Patent Number:	10009161
Patent Number:	11258532
Patent Number:	10791530
Patent Number:	11569958
Patent Number:	11363548
Patent Number:	11115157
Patent Number:	10925079
Patent Number:	10506630
Patent Number:	11405942
Patent Number:	11044743
Patent Number:	11765735
Patent Number:	10856307
Patent Number:	10869303
Patent Number:	10897720
Patent Number:	10609699
Patent Number:	11240785
Patent Number:	11160051
Patent Number:	10715290
Patent Number:	10966253
Patent Number:	10594460
Patent Number:	10638463
Patent Number:	11219000
Patent Number:	10715283
Patent Number:	10616916
Patent Number:	10764099
Patent Number:	10868702
Patent Number:	10952206
Patent Number:	11540272

Property Type	Number
Patent Number:	10979190
Patent Number:	11671218
Patent Number:	10284404
Patent Number:	10616024
Patent Number:	10721765
Patent Number:	10721031
Patent Number:	10958380
Patent Number:	10805050
Patent Number:	10616834
Patent Number:	9497666
Patent Number:	9832806
Patent Number:	10334657
Patent Number:	10420067
Patent Number:	10159025
Patent Number:	10667322
Patent Number:	10986530
Patent Number:	10511994
Patent Number:	10448386
Patent Number:	10721118
Patent Number:	10880222
Patent Number:	11044777
Patent Number:	11627631
Patent Number:	11012911
Patent Number:	10869236
Patent Number:	10708968
Patent Number:	10616932
Patent Number:	10660004
Patent Number:	10869243
Patent Number:	10470159
Patent Number:	10499376
Patent Number:	10812230
Patent Number:	10873671
Patent Number:	11178573
Patent Number:	10772148

CORRESPONDENCE DATA

Fax Number:

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

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ATTORNEY DOCKET NUMBER:	ASSIGNMENT KT PEGASUS 01
NAME OF SUBMITTER:	YEASUN YOON
SIGNATURE:	/yoon/
DATE SIGNED:	10/11/2023
	This document serves as an Oath/Declaration (37 CFR 1.63).
Total Attachments: 33 source=Assigment (Exclusive License) _Hole copy#page1.tif source=Assigment (Exclusive License) _Hole copy#page2.tif source=Assigment (Exclusive License) _Hole copy#page3.tif source=Assigment (Exclusive License) _Hole copy#page4.tif source=Assigment (Exclusive License) _Hole copy#page5.tif source=Assigment (Exclusive License) _Hole copy#page6.tif source=Assigment (Exclusive License) _Hole copy#page7.tif source=Assigment (Exclusive License) _Hole copy#page8.tif source=Assigment (Exclusive License) _Hole copy#page9.tif source=Assigment (Exclusive License) _Hole copy#page10.tif source=Assigment (Exclusive License) _Hole copy#page11.tif source=Assigment (Exclusive License) _Hole copy#page12.tif source=Assigment (Exclusive License) _Hole copy#page13.tif source=Assigment (Exclusive License) _Hole copy#page14.tif source=Assigment (Exclusive License) _Hole copy#page15.tif source=Assigment (Exclusive License) _Hole copy#page16.tif source=Assigment (Exclusive License) _Hole copy#page17.tif source=Assigment (Exclusive License) _Hole copy#page18.tif source=Assigment (Exclusive License) _Hole copy#page19.tif source=Assigment (Exclusive License) _Hole copy#page20.tif source=Assigment (Exclusive License) _Hole copy#page21.tif source=Assigment (Exclusive License) _Hole copy#page22.tif source=Assigment (Exclusive License) _Hole copy#page23.tif source=Assigment (Exclusive License) _Hole copy#page24.tif source=Assigment (Exclusive License) _Hole copy#page25.tif source=Assigment (Exclusive License) _Hole copy#page26.tif source=Assigment (Exclusive License) _Hole copy#page27.tif source=Assigment (Exclusive License) _Hole copy#page28.tif source=Assigment (Exclusive License) _Hole copy#page29.tif source=Assigment (Exclusive License) _Hole copy#page30.tif source=Assigment (Exclusive License) _Hole copy#page31.tif source=Assigment (Exclusive License) _Hole copy#page32.tif source=Assigment (Exclusive License) _Hole copy#page33.tif	

PATENT RIGHTS ASSIGNMENT

WHEREAS, **KT Corporation**, having a place of business at KT Kwanghwamun Bldg, East 33, Jong-ro 3-gil, Seoul, Korea 03155 (hereinafter "Assignor") is the sole owner of any and all patents and/or patent applications in the Patent Families listed in Schedule 1 annexed hereto (collectively referred to as the "Patents"). Herein, the term "Patent Families" means a collection of (i) a patent or a patent application; (ii) any and all foreign counterparts of the patent or the patent application described in (i); (iii) any divisionals, continuations, continuations-in-part, reissues, reexaminations, utility models, parents, or extensions, relating to any of the patents and patent applications described in (i) and (ii);, and (iv) any patent or patent application whose priority is based upon or in common with any patents and patent applications described in (i), (ii) and (ii).

WHEREAS, **Pegasus Wireless Innovation LLC**, having a place of business at 20319 Kiawah island Drive Ashburn VA 20147 USA (hereinafter "Purchaser") is desirous of acquiring all substantial rights in and to the Patents; and

Now, Therefore,

For good and valuable consideration, the receipt of which is hereby acknowledged, Assignor does hereby sell, assign, transfer and set over to Assignee, subject to existing encumbrances, (a) an exclusive, worldwide license to import, manufacture, have manufactured, use, lease, sell, offer to sell, or otherwise dispose of products encompassed by one or more claims of the Patents; (b) the exclusive right to: (i) enforce the Patents; (ii) sublicense or otherwise grant rights under the Patents; (iii) collect and receive damages, royalties, injunctive relief, and/or settlements for past, current, and future infringements of and to the Patents; (iv) sue or otherwise assert causes of action for the past, current,

and future infringements of and to the Patents; (v) control the prosecution of the Patents before any patent office in the world; (vi) indulge infringement of the Patents; and (c) any and all other substantial rights to and in the Patents necessary and sufficient under any applicable law or precedent to confer standing to Assignee and permit Assignee to initiate any actions on its own.

Assignor has executed this Assignment by its duly authorized representative.

KT Corporation

By: 陳榮浩

Name: Chanho Min

Title: Team Manager

Date: 12/23/2022

SCHEDULE 1

No.	REF-NO	Country	Application/Issue No.	Application/issue date
1	P20130686	Provisional Application	10-2013-0114759	2013.09.26
	P20140028	KR Application	10-2014-0007262	2014.01.21
		KR Issue	10-1940344	2019.01.14
	P20130686PC	PCT	PCT/KR2014/008216	2014.09.02
	P20130686US	US Application	15/024,862	2016.03.25
		US Issue	9,894,644	2018.02.13
	P20130686CN	CN Application	201480053323.5	2016.03.25
		CN Issue	CN105659511B	2019.02.12
2	P20130687	Provisional Application	10-2013-0114763	2013.09.26
	P20130953	Provisional Application	10-2013-0138703	2013.11.15
	P20140134	KR Application	10-2014-0027531	2014.03.10
		KR Issue	10-1561838	2015.10.14
	P20140134P1	KR Application(DA)	10-2015-0139479	2015.10.05
		KR Issue(DA)	10-1645898	2016.07.28
	P20130687PC	PCT	PCT/KR2014/008708	2014.09.18
	P20130687US	US Application	15/024,873	2016.03.25
		US Issue	10,432,361	2019.10.01
	P20130687USC1	US Application(CA)	16/542,513	2019.08.16
		US Issue(CA)	10,742,364	2020.08.11
	P20130687CN	CN Application	201480053584.7	2016.03.28

3	P20130698	Provisional Application	10-2013-0115367	2013.09.27
	P20140216	KR Application	10-2014-0057938	2014.05.14
		KR Issue	10-1904572	2018.09.27
	P20130698PC	PCT	PCT/KR2014/008765	2014.09.22
	P20130698US	US Application	15/025,262	2016.03.25
		US Issue	10,181,931	2018.01.15
	P20130698CN	CN Application	201480053321.6	2016.03.25
		CN Issue	CN105594139B	2019.10.25
4	P20130737	Provisional Application	10-2013-0118593	2013.10.04
	P20131006	Provisional Application	10-2013-0142479	2013.11.21
	P20140221	KR Application	10-2014-0067128	2014.06.02
		KR Issue	10-1919636	2018.11.12
	P20140221PC	PCT	PCT/KR2014/008995	2014.09.26
	P20140221US	US Application	15/026,260	2016.03.31
		US Issue	9,998,269	2018.06.12
	P20140221CN	CN Application	201480054504.X	2016.04.01
		CN Issue	CN105659514B	2018.06.01
5	P20140587	Provisional Application	10-2014-0101467	2014.08.07
	P20150161	KR Application	10-2015-0094846	2015.07.02
		KR Issue	10-1875255	2018.06.29
	P20140587PC	PCT	PCT/KR2015/008037	2015.07.31
	P20140587US	US Application	15/501,263	2017.02.02
		US Issue	10,644,819	2020.05.05

	P20140587USD1	US Application(DA)	16/832,151	2020.03.27
	P20140587CN	CN Application	201580042296.6	2017.02.06
		CN Issue	CN106664697B	2020.06.16
6	P20150017	Provisional Application	10-2015-0008486	2015.01.19
	P20150734	Provisional Application	10-2015-0135899	2015.09.24
	P20150844	KR Application	10-2016-0005012	2016.01.15
		KR Issue	10-1856304	2018.05.02
	P20150017PC	PCT	PCT/KR2016/000494	2016.01.18
	P20150017US	US Application	15/544,363	2017.07.18
		US Issue	10,306,546	2019.05.28
	P20150017CN	CN Application	201680004482.5	2017.06.23
		CN Issue	CN107113149B	2020.12.08
7	P20150278	Provisional Application	10-2015-0068715	2015.05.18
	P20150609	Provisional Application	10-2015-0114876	2015.08.13
	P20160030	KR Application	10-2016-0027594	2016.03.08
		KR Issue	10-1956978	2019.03.05
	P20150278PC	PCT	PCT/KR2016/005215	2016.05.17
	P20150278US	US Application	15/569,133	2017.10.25
		US Issue	10,341,806	2019.07.02
	P20150278USC1	US Application(CA)	16/412,376	2019.05.14
		US Issue(CA)	10,728,693	2020.07.28
	P20150278CN	CN Application	201680006425.0	2017.07.19

		CN Issue	CN107211238B	2020.11.06
8	P20150724	Provisional Application	10-2015-0135756	2015.09.24
	P20150865	Provisional Application	10-2015-0162286	2015.11.19
	P20160287	KR Application	10-2016-0098858	2016.08.03
		KR Issue	10-1896766	2018.09.03
	P20150724US	US Application	15/260,373	2016.09.09
		US Issue	10,085,249	2018.09.25
	P20150724CN	CN Application	201610806693.2	2016.09.06
		CN Issue	CN106559161B	2019.01.04
9	P20160067	Provisional Application	10-2016-0014509	2016.02.04
	P20160076	Provisional Application	10-2016-0015050	2016.02.05
	P20160169	Provisional Application	10-2016-0039529	2016.03.31
	P20160548	KR Application	10-2016-0117138	2016.09.12
		KR Issue	10-1910245	2018.10.15
	P20160067US	US Application	15/415,781	2017.01.25
		US Issue	10,568,071	2020.02.18
	P20160067CN	CN Application	201710021966.9	2017.01.12
10	P20160126	Provisional Application	10-2016-0030172	2016.03.14
	P20160855	KR Application	10-2017-0022956	2017.02.21
		KR Issue	10-2237525	2021.04.01
	P20160126PC	PCT	PCT/KR2017/002535	2017.03.08
	P20160126US	US Application	16/084,594	2018.09.13

		US Issue	11,197,309	2021.12.07
	P20160126CN	CN Application	201780017398.1	2018.09.14
		CN Issue	CN 108781154B	2021.12.14
11	P20160143	Provisional Application	10-2016-0037224	2016.03.28
	P20160856	KR Application	10-2017-0022964	2017.02.21
		KR Issue	10-2065432	2020.01.07
	P20160143PC	PCT	PCT/KR2017/002536	2017.03.08
	P20160143US	US Application	16/088,914	2018.09.27
		US Issue	10,892,867	2021.01.12
	P20160143CN	CN Application	201780013601.8	2018.08.27
		CN Issue	CN 108702280 B	
12	P20160240	Provisional Application	10-2016-0051737	2016.04.27
	P20160818	KR Application	10-2016-0171232	2016.12.15
		KR Issue	10-1963483	2019.03.22
	P20160240US	US Application	15/497,362	2017.04.26
		US Issue	10,412,731	2019.09.10
	P20160240USC1	US Application(CA)	16/529,789	2019.08.02
		US Issue(CA)	10,616,889	2020.04.07
	P20160240CN	CN Application	201710280467.X	2017.04.26
		CN Issue	CN 107317662 B	2020.12.08
13	P20160257	Provisional Application	10-2016-0055676	2016.05.04
	P20160265	Provisional Application	10-2016-0058317	2016.05.12

14	P20170206	KR Application	10-2017-0056206	2017.05.02
		KR Issue	10-2120976	2020.06.03
	P20170207	KR Application	10-2017-0056011	2017.05.02
		KR Issue	10-2093906	2020.03.20
	P20160257PC	PCT	PCT/KR2017/004702	2017.05.02
	P20160257US	US Application	16/098,812	2018.11.02
		US Issue	11,431,460	2022.08.30
	P20160257CN	CN Application	201780027159.4	2018.11.01
		CN Issue	CN 109075949 B	2021.12.14
	P20170207P1	KR Application(DA)	10-2020-0031570	2020.03.13
		KR Issue(DA)	10-2121009	2020.06.03
	P20160257USD1	US Application(DA)	16/179,863	2018.11.02
		US Issue(DA)	11,431,460	2022.08.30
	P20160257CND1	CN Application(DA)	201811307533.9	2018.11.05
		CN Issue(DA)	CN 109547182 B	2021.07.23
	P20160645	Provisional Application	10-2016-0116784	2016.09.09
	P20170334	KR Application	10-2017-0098820	2017.08.04
		KR Issue	10-2120856	2020.06.03
	P20160645PC	PCT	PCT/KR2017/008734	2017.08.11
	P20160645US	US Application	16/331,969	2019.03.09
		US Issue	11,115,976	2021.09.07
	P20160645CN	CN Application	201780055337.4	2019.03.08
		CN Issue	CN 109691000 B	2021.11.05

15	P20160670	Provisional Application	10-2016-0122509	2016.09.23
	P20170648	KR Application	10-2017-0118923	2017.09.15
		KR Issue	10-2186397	2020.11.27
	P20160670PC	PCT	PCT/KR2017/010496	2017.09.22
	P20160670US	US Application	16/335,717	2019.03.22
		US Issue	10,849,111	2020.11.24
	P20160670CN	CN Application	201780058930.4	2019.03.25
		CN Issue	CN 109792315 B	2021.10.26
16	P20160683	Provisional Application	10-2016-0127089	2016.09.30
	P20170199	KR Application	10-2017-0080594	2017.06.26
		KR Issue	10-2085195	2020.02.28
	P20160683US	US Application	15/716,568	2017.09.27
		US Issue	10,581,560	2020.03.03
	P20160683CN	CN Application	201710795343.5	2017.09.06
		CN Issue	CN 107888333 B	2020.12.08
17	P20140174	Provisional Application	10-2014-0033579	2014.03.21
	P20140196	Provisional Application	10-2014-0034955	2014.03.25
	P20140207	Provisional Application	10-2014-0037394	2014.03.31
	P20140784	KR Application	10-2014-0175190	2014.12.08
		KR Issue	10-1722300	2017.03.27
	P20140174PC	PCT	PCT/KR2015/002021	2015.03.03
	P20140174US	US Application	14/664,853	2015.03.21
		US Issue	9,629,010	2017.04.18

	P20140174USC1	US Application(CA)	15/454,020	2017.03.09
		US Issue(CA)	10,009,161	2018.06.26
	P20140174CN	CN Application	201580006948.0	2016.08.02
		CN Issue	CN 106063214 B	2019.07.02
	P20140174CND1	CN Application(DA)	201910480118.1	2019.06.04
		CN Issue(DA)	CN 110149169 B	2021.12.14
18	P20140253	Provisional Application	10-2014-0046986	2014.04.18
	P20141039	KR Application	10-2015-0021154	2015.02.11
		KR Issue	10-1674791	2016.11.03
	P20140253US	US Application	14/687,865	2015.04.15
		US Issue	10091736	2018.10.02
	P20140253CN	CN Application	201510188805.8	2015.04.20
		CN Issue	CN 105007616 B	2019.09.24
19	P20160508	Provisional Application	10-2016-0089972	2016.07.15
	P20170351	KR Application	10-2017-0087597	2017.07.11
		KR Issue	10-2178412	2020.11.09
	P20160508PC	PCT	PCT/KR2017/007466	2017.07.12
	P20160508US	US Application	16/316,774	2019.01.10
		US Issue	10,791,530	2020.09.29
	P20160508EP	EP Application	17827948.5	2018.12.28
	P20160508CN	CN Application	201780041919.7	2019.01.04
		CN Issue	CN 109417422 B	

20	P20160627	Provisional Application	10-2016-0112748	2016.09.01
	P20170169	KR Application	10-2017-0059543	2017.05.12
		KR Issue	10-2123233	2020.06.10
	P20160627PC	PCT	PCT/KR2017/008944	2017.08.17
	P20160627US	US Application	16/318,466	2019.01.17
		US Issue	11,044,743	2021.06.22
	P20160627USC1	US Application(CA)	17/307,945	2021.05.04
	P20160627EP	EP Application	17846885.6	2018.12.28
	P20160627CN	CN Application	201780039745.0	2018.12.26
		CN Issue	CN 109328481 B	
21	P20160720	Provisional Application	10-2016-0130101	2016.10.07
	P20170649	KR Application	10-2017-0124261	2017.09.26
		KR Issue	10-2156672	2020.09.10
	P20160720PC	PCT	PCT/KR2017/010863	2017.09.28
	P20160720US	US Application	16/340,096	2019.04.05
		US Issue	11,038,735	2021.06.15
	P20160720USC1	US Application(CA)	17/314,034	2021.05.06
		US Issue(CA)		
	P20160720USC1C1	US Application(CA)	18/078,965	2022.12.11
		US Issue(CA)		
	P20160720EP	EP Application	17858693.9	2019.04.16
	P20160720CN	CN Application	201780061902.8	2019.04.04
		CN Issue	CN 109792429 B	2021.12.14

22	P20160768	Provisional Application	10-2016-0141451	2016.10.27
	P20170778	Provisional Application	10-2017-0130023	2017.10.11
	P20170798	KR Application	10-2017-0139598	2017.10.25
		KR Issue	10-2057127	2019.12.12
	P20160768PC	PCT	PCT/KR2017/011958	2017.10.27
	P20160768US	US Application	16/344,947	2019.04.25
		US Issue	11,115,157	2021.09.07
	P20160768USC1	US Application(CA)	17/379,977	2021.07.19
	P20160768EP	EP Application	17865477.8	2019.04.26
	P20160768CN	CN Application	201780062118.9	2019.04.08
		CN Issue	CN 109804692 B	2022.07.15
23	P20160836	Provisional Application	10-2016-0152659	2016.11.16
	P20170803	KR Application	10-2017-0151983	2017.11.15
		KR Issue	10-2156668	2020.09.10
	P20160836PC	PCT	PCT/KR2017/012992	2017.11.16
	P20160836US	US Application	16/349,874	2019.05.14
		US Issue	11,405,942	2022.08.02
	P20160836CN	CN Application	201780069729.6	2019.05.10
24	P20160837	Provisional Application	10-2016-0152587	2016.11.16
	P20170804	KR Application	10-2017-0153125	2017.11.16
		KR Issue	10-2195869	2020.12.21
	P20160837PC	PCT	PCT/KR2017/013045	2017.11.16
	P20160837US	US Application	16/461,640	2019.05.16

		US Issue	11,240,785	2022.02.01
	P20160837USC1	US Application(CA)	17/543,675	2021.12.06
	P20160837EP	EP Application	17871249.3	2019.05.27
	P20160837CN	CN Application	201780070560.6	2019.05.15
25	P20160768	Provisional Application	10-2016-0141451	2016.10.27
	P20170778	Provisional Application	10-2017-0130023	2017.10.11
	P20170142	Provisional Application	10-2017-0037553	2017.03.24
	P20170428	Provisional Application	10-2017-0079911	2017.06.23
	P20170808	KR Application(병합)	10-2017-0139885	2017.10.26
		KR Issue(병합)	10-2162591	2020.09.28
	P20170142PC	PCT	PCT/KR2017/011968	2017.10.27
	P20170142US	US Application	16/340,460	2019.04.09
		US Issue	10,925,079	2021.02.16
	P20170142EP	EP Application	17865212.9	2019.04.26
	P20170142CN	CN Application	201780066539.9	2019.04.26
		CN Issue	CN 109891988 B	2022.08.09
26	P20170011	Provisional Application	10-2017-0002589	2017.01.06
	P20170296	Provisional Application	10-2017-0066632	2017.05.30
	P20170933	KR Application	10-2018-0001157	2018.01.04
		KR Issue	10-2114096	2020.05.18
	P20170011PC	PCT	PCT/KR2018/000221	2018.01.05

	P20170011US	US Application	16/464,135	2019.05.24
		US Issue	11,160,051	2021.10.26
	P20170011EP	EP Application	18736364.3	2019.05.31
	P20170011CN	CN Application	201880004512.1	2019.05.22
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27	P20170132	Provisional Application	10-2017-0035615	2017.03.21
	P20170866	Provisional Application	10-2017-0101169	2017.08.09
	P20170935	KR Application	10-2018-0014576	2018.02.06
		KR Issue	10-2043996	2019.11.06
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		KR Issue(DA)	10-2206761	2021.01.19
	P20170132US	US Application	15/924,553	2018.03.19
		US Issue	10,856,307	2020.12.01
	P20170132CN	CN Application	201810236651.9	2018.03.21
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	P20170479	Provisional Application	10-2017-0082920	2017.06.29
	P20170622	Provisional Application	10-2017-0101782	2017.08.10
	P20170132	Provisional Application	10-2017-0035615	2017.03.21
	P20170866	Provisional Application	10-2017-0101169	2017.08.09
	P20180049	KR Application	10-2018-0018656	2018.02.14
		KR Issue	10-2100483	2020.04.07

	P20170479US	US Application	15/923,658	2018.03.16
		US Issue	10,869,303	2020.12.15
	P20170479CN	CN Application	201810217863.2	2018.03.16
		CN Issue	CN 108633072 B	8/26/2022
29	P20170142	Provisional Application	10-2017-0037553	2017.03.24
	P20170428	Provisional Application	10-2017-0079911	2017.06.23
	P20170800	KR Application	10-2017-0139604	2017.10.25
		KR Issue	10-2010019	2019.08.06
	P20170428US	US Application	15/934,927	2018.03.23
		US Issue	10,506,630	2019.12.10
	P20170428CN	CN Application	201810251436.6	2018.03.26
		CN Issue	CN 108633076 B	
30	P20170318	Provisional Application	10-2017-0067957	2017.05.31
	P20180018	KR Application	10-2018-0035572	2018.03.28
		KR Issue	10-2117669	2020.05.26
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		US Issue	10,805,050	2020.10.13
	P20170318CN	CN Application	201810524233.X	2018.05.28
		CN Issue	CN 108988984 B	2021.07.09
31	P20170531	Provisional Application	10-2017-0089654	2017.07.14
	P20180193	KR Application	10-2018-0054207	2018.05.11
		KR Issue	10-2128964	2020.06.25
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	P20170531CN	CN Application	201810756991.4	2018.07.11
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	P20170621	Provisional Application	10-2017-0102577	2017.08.11
	P20180204	KR Application	10-2018-0057278	2018.05.18
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		US Issue	10,594,460	2020.03.17
	P20170594CN	CN Application	201810801096.X	2018.07.20
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33	P20170764	Provisional Application	10-2017-0128188	2017.09.29
	P20170916	Provisional Application	10-2017-0162728	2017.11.30
	P20180207	KR Application	10-2018-0077270	2018.07.03
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		KR Issue(DA)	10-2246988	2021.04.26
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		US Issue	10,638,463	2020.04.28
	P20170764USD1	US Application(DA)	16/826,482	2020.03.23
		US Issue(DA)	11,219,000	2022.01.04
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		CN Issue	CN 109586883 B	2021.11.05

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	P20180507	KR Application	10-2018-0132306	2018.10.31
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		US Issue	11,258,532	2022.02.22
	P20180014USC1	US Application(CA)	17/565,353	2021.12.29
	P20180305EP	EP Application	19150559.3	2019.01.07
	P20180014CN	CN Application	201910011509.9	2019.01.07
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		US Issue	11,330,573	2022.05.10
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		CN Issue	CN 107005903 B	2021.01.15
36	P20160666	Provisional Application	10-2016-0122506	2016.09.23
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		KR Issue	10-2001301	2019.07.11
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		US Issue	10,334,657	2019.06.25

	P20160666CN	CN Application	201710864759.8	2017.09.22
		CN Issue	CN 108307543 B	2021.06.15
37	P20150003	Provisional Application	10-2015-0002930	2015.01.08
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		KR Issue	10-1866619	2018.06.04
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		US Issue	10,237,084	2019.03.19
	P20150003CN	CN Application	201580066326.7	2017.06.06
		CN Issue	CN 107005820 B	2020.11.03
38	P20130110	Provisional Application	10-2013-0034603	2013.03.29
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		KR Issue	10-1632277	2016.06.15
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	P20130110CN	CN Application	201480019499.9	2015.09.29
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39	P20130124	Provisional Application	10-2013-0036870	2013.04.04
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	P20131105	KR Application	10-2013-0161241	2013.12.23
		KR Issue	10-1628874	2016.06.02
	P20130124PC	PCT	PCT/KR2014/002902	2014.04.04

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		KR Issue(DA)	10-2133255	2020.07.07
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		US Issue	11,044,777	2021.06.22
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	P20160805EP	EP Application	17867340.6	2019.05.16
41	P20160805CN	CN Application	201780068268.0	2019.05.05
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		KR Issue	10-2016728	2019.08.26
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		US Issue	10,880,222	2020.12.29
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	P20160264CN	CN Application	201780029131.4	2018.11.12
44	P20170082	Provisional Application	10-2017-0027919	2017.03.03
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		US Issue	11,012,911	2021.05.18
45	P20170144	Provisional Application	10-2017-0037934	2017.03.24
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		KR Issue	10-2174936	2020.10.30

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		US Issue	10,869,236	2020.12.15
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		KR Issue	10-2115233	2020.05.20
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		US Issue	10,708,968	2020.07.07
47	P20180026	Provisional Application	10-2018-0006980	2018.01.19
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		US Issue	10,812,230	2020.10.20
48	P20150254	Provisional Application	10-2015-0067848	2015.05.15
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49	P20130907	Provisional Application	10-2013-0135867	2013.11.08
	P20140043	Provisional Application	10-2014-0012709	2014.02.04
	P20140224	KR Application	10-2014-0088948	2014.07.15
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		US Issue(CA)	10,178,626	2019.01.08
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		CN Issue	CN 105594263 B	2019.11.01
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	P20140208	Provisional Application	10-2014-0037398	2014.03.31
	P20140325	Provisional Application	10-2014-0059630	2014.05.19
	P20140785	KR Application	10-2014-0175182	2014.12.08
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	P20140175US	US Application	14/664,854	2015.03.21
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		CN Issue	CN 106464647 B	2019.09.13
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	P20170314CN	CN Application	201810531289.8	2018.05.29
		CN Issue	CN 108988997 B	2021.04.02
53	P20160663	Provisional Application	10-2016-0122503	2016.09.23
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		KR Issue	10-2127753	2020.06.23
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54	P20160696	Provisional Application	10-2016-0127093	2016.09.30
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		US Issue	11,363,548	2022.06.14
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		CN Issue	CN 109906569 B	2021.05.11
55	P20160790	Provisional Application	10-2016-0143013	2016.10.31
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		KR Issue	10-2114940	2020.05.19
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		US Issue(CA)	11540272	2022.12.08
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56	P20160806	Provisional Application	10-2016-0146950	2016.11.04
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		EP Issue	3537794	2021.09.08
	P20160806DE	DE Application	17866547.7	2019.05.13
		DE Issue	3537794	2021.09.08
	P20160806GB	GB Application	17866547.7	2019.05.13
		GB Issue	3537794	2021.09.08
	P20160806FR	FR Application	17866547.7	2019.05.13
		FR Issue	3537794	2021.09.08
	P20160806CN	CN Application	201780067632.1	2019.04.30
57	P20160835	Provisional Application	10-2016-0152845	2016.11.16
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		US Issue	10,897,720	2021.01.19

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	P20170622	Provisional Application	10-2017-0101782	2017.08.10
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		US Issue(CA)	11,044,718	2021.06.22
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59	P20170131CN	CN Application	201810217772.9	2018.03.16
		CN Issue	CN 108633071 B	8/23/2022
	P20170303	Provisional Application	10-2017-0065379	2017.05.26
	P20170451	Provisional Application	10-2017-0081411	2017.06.27
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		US Issue	10,979,190	2021.04.13

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		CN Issue	CN 108966181 B	2021.07.23
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		KR Issue	10-2114919	2020.05.19
	P20180097P1	KR Application(DA)	10-2020-0034779	2020.03.23
		KR Issue(DA)	10-2198758	2020.12.29
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		US Issue	10,284,404	2019.05.07
	P20170304USC1	US Application(CA)	16/357,686	2019.03.19
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	P20170304CN	CN Application	201810501797.1	2018.05.23
61	P20170741	Provisional Application	10-2017-0118757	2017.09.15
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	P20170741CN	CN Application	201811085562.5	2018.09.17
62	P20170743	Provisional Application	10-2017-0118409	2017.09.15
	P20180159	KR Application	10-2018-0056950	2018.05.18
		KR Issue	10-2193191	2020.12.14

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63	P20170765	Provisional Application	10-2017-0128177	2017.09.29
	P20170917	Provisional Application	10-2017-0162692	2017.11.30
	P20180532	Provisional Application	10-2018-0084727	2018.07.20
	P20180540	KR Application	10-2018-0092635	2018.08.08
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		US Issue	10,721,765	2020.07.21
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64	P20170795	Provisional Application	10-2017-0128513	2017.10.02
	P20180084	Provisional Application	10-2018-0022186	2018.02.23
	P20180208	KR Application	10-2018-0096773	2018.08.20
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		US Issue	10,715,283	2020.07.14
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		CN Issue	CN 109600212 B	2021.08.31
65	P20140677	Provisional Application	10-2014-0119263	2014.09.05
	P20150247	KR Application	10-2015-0094021	2015.07.01

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		US Issue	10,735,967	2020.08.04
	P20140677CN	CN Application	201580047094.0	2017.03.02
		CN Issue	CN 106717045 B	2021.03.05
66	P20150098	Provisional Application	10-2015-0032665	2015.03.09
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		KR Issue	10-1987525	2019.06.03
	P20150098PC	PCT	PCT/KR2016/002281	2016.03.08
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		US Issue	10,708,893	2020.07.07
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		CN Issue	CN 107431592 B	2020.07.07
67	P20160241	Provisional Application	10-2016-0054935	2016.05.03
	P20170025	KR Application	10-2017-0044062	2017.04.05
		KR Issue	10-2016106	2019.08.23
	P20160241US	US Application	15/498,607	2017.04.27
		US Issue	10,420,067	2019.09.17
	P20160241CN	CN Application	201710282167.5	2017.04.26
		CN Issue	CN 107360561 B	2020.09.11
	68	P20160249	Provisional Application	10-2016-0054937
P20160250		Provisional Application	10-2016-0054936	2016.05.03

	P20170178	KR Application	10-2017-0053295	2017.04.26
		KR Issue	10-2057212	2019.12.12
	P20160249PC	PCT	PCT/KR2017/004432	2017.04.26
	P20160249US	US Application	16/098,841	2018.11.02
		US Issue	10,667,322	2020.05.26
	P20160249CN	CN Application	201780027502.5	2018.11.02
		CN Issue	CN 109076496 B	2021.09.03
69	P20160251	Provisional Application	10-2016-0054930	2016.05.03
	P20170076	KR Application	10-2017-0045815	2017.04.10
		KR Issue	10-2005910	2019.07.25
	P20160251US	US Application	15/582,906	2017.05.01
		US Issue	10,159,025	2018.12.18
	P20160251CN	CN Application	201710291278.2	2017.04.28
		CN Issue	CN 107343299 B	2021.01.05
70	P20170098	Provisional Application	10-2017-0030764	2017.03.10
	P20170317	Provisional Application	10-2017-0068074	2017.05.31
	P20170896	Provisional Application	10-2017-0152149	2017.11.15
	P20180044	KR Application	10-2018-0026611	2018.03.07
		KR Issue	10-2065137	2020.01.06
	P20170098PC	PCT	PCT/KR2018/002750	2018.03.08
	P20170098US	US Application	16/349,259	2019.05.10
		US Issue	10,986,530	2021.04.20
	P20170098CN	CN Application	201880004237.3	2019.05.06

		CN Issue	CN 109937587 B	2022.06.14
71	P20170397	Provisional Application	10-2017-0076126	2017.06.15
	P20170930	KR Application	10-2018-0051293	2018.05.03
		KR Issue	10-2023672	2019.09.16
	P20170397US	US Application	16/004,783	2018.06.11
		US Issue	10,511,994	2019.12.17
	P20170397CN	CN Application	201810612491.3	2018.06.14
	P20170397CN	CN Issue	CN 109151878 B	2021.12.14
72	P20160282	Provisional Application	10-2016-0062068	2016.05.20
	P20160481	KR Application	10-2016-0088331	2016.07.13
		KR Issue	10-2100491	2020.04.07
	P20160481PC	PCT	PCT/KR2017/007452	2017.07.12
	P20160481US	US Application	16/316,092	2019.01.08
		US Issue	10,869,243	2020.12.15
73	P20170018	Provisional Application	10-2017-0005590	2017.01.12
	P20170938	KR Application	10-2018-0002947	2018.01.09
		KR Issue	10-2117098	2020.05.25
	P20170018PC	PCT	PCT/KR2018/000518	2018.01.11
	P20170018US	US Application	16/343,819	2019.04.22
		US Issue	10,660,004	2020.05.19
74	P20170234	Provisional Application	10-2017-0054983	2017.04.28
	P20170673	KR Application	10-2018-0000256	2018.01.02
		KR Issue	10-1957087	2019.03.05
	P20170234US	US Application	15/967,512	2018.04.30

		US Issue	10,772,148	2020.09.08
75	P20170238	Provisional Application	10-2017-0057299	2017.05.08
	P20180146	KR Application	10-2018-0036753	2018.03.29
		KR Issue	10-2066689	2020.01.09
	P20170238US	US Application	15/969,858	2018.05.03
		US Issue	10,470,159	2019.11.05
76	P20170389	Provisional Application	10-2017-0076924	2017.06.16
	P20180250	KR Application	10-2018-0053053	2018.05.09
		KR Issue	10-2042036	2019.11.01
	P20170389US	US Application	16/007,050	2018.06.13
		US Issue	10,499,376	2019.12.03
77	P20180202	Provisional Application	10-2018-0039897	2018.04.05
	P20190047	KR Application	10-2019-0020835	2019.02.22
		KR Issue	10-2206773	2021.01.19
	P20180202US	US Application	16/373,808	2019.04.03
		US Issue	10,873,671	2020.12.22
78	P20180557	Provisional Application	10-2018-0090004	2018.08.01
	P20190287	KR Application	10-2019-0075402	2019.06.25
		KR Issue	10-2198010	2020.12.28
	P20180557US	US Application	16/528,980	2019.08.01
		US Issue	11,178,573	2021.11.16
79	P20160807	가출원	10-2016-0146955	2016.11.04
	P20170669	KR 출원	10-2017-0135215	2017.10.18

80		KR 등록	10-2130999	2020.07.01
	P20160807PC	PCT 국제출원	PCT/KR2017/012003	2017.10.27
	P20160807US	US 출원	16/347,571	2019.05.03
	P20160807EP	EP 출원	17867332.3	2019.05.13
	P20160807CN	CN 출원	201780067633.6	2019.04.30
	P20170184	가출원	10-2017-0047545	2017.04.12
	P20170239	가출원	10-2017-0056477	2017.05.02
	P20170507	가출원	10-2017-0086107	2017.07.06
	P20180096	정규출원	10-2018-0034955	2018.03.27
	P20170184US	US 출원	15/951,349	2018.04.12
		US 등록	10,958,380	2021.03.23
	P20170184USC1	US 출원(CA)	17/173,097	2021.02.10
	P20170184CN	CN 출원	201810318869.9	2018.04.11



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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/170,922	12/27/2022	11540272	KT21-0101C1	1018

126667 7590 12/07/2022
INVENSTONE PATENT, LLC
7925 Jones Branch Dr Suite 3100-A
McLean, VA 22102

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 129 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional inventors):

Kyujin PARK, Seoul, KOREA, REPUBLIC OF;
Woo-jin CHOI, Seoul, KOREA, REPUBLIC OF;

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

KT CORPORATION, Gyeonggi-do, KOREA, REPUBLIC OF;

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IR103 (Rev. 10/09)



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/170,922	02/09/2021	Kyujin PARK	KT21-0101C1	1018
126667 7590 11/18/2022 INVENSTONE PATENT, LLC 7925 Jones Branch Dr Suite 3100-A McLean, VA 22102			EXAMINER YEUNG, MANG HANG	
			ART UNIT	PAPER NUMBER
			2463	
			NOTIFICATION DATE	DELIVERY MODE
			11/18/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

dan@invenstonepat.com
mail@invenstonepat.com



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

INVENSTONE PATENT, LLC
7925 Jones Branch Dr Suite 3100-A
McLean, VA 22102

In re Application of KT CORPORATION
Application No.: 17/170,922
Filing Date: 09 February 2021
Attorney Docket No.: KT21-0101C1
For: METHOD AND DEVICE FOR ALLOCATING
DATA CHANNEL RESOURCE FOR
NEXT-GENERATION WIRELESS ACCESS
NETWORK

**DECISION ON PETITION
UNDER 37 CFR 1.55(e)**

This is a decision on the petition under 37 CFR 1.55(e), filed 06 October 2022, to accept an unintentionally delayed claim under 35 U.S.C. 119(a) through (d) or (f) and/or 35 U.S.C. 365(a) or (b) for priority to one or more prior foreign applications.

Under 37 CFR 1.55(e), a petition to accept an unintentionally delayed claim under 35 U.S.C. 119(a) through (d) or (f) and/or 35 U.S.C. 365(a) or (b) for the benefit of a prior-filed foreign application must be accompanied by:

- (i) the claim required by 35 U.S.C. 119 and 37 CFR 1.55(e)(1) to the prior-filed application, unless previously submitted;
- (ii) a certified copy of the foreign application, if required by 37 CFR 1.55(f), unless previously submitted or an exception under 37 CFR 1.55(h), (i), or (j) applies;
- (iii) the petition fee set forth in 37 CFR 1.17(m); and
- (iv) a statement that the entire delay between the date the priority claim was due under 37 CFR 1.55(d) and the date the claim was filed was unintentional. The Director may require additional information where there is a question whether the delay was unintentional.

With regard to item (i), the claim for foreign priority has been presented in an application data sheet as required by 37 CFR 1.55(e)(1).

With regard to item (ii), the certified copy requirement has been satisfied.

With regard to item (iii), the petition fee set forth in 37 CFR 1.17(m) has been submitted.

With regard to item (iv), the petition contains a proper statement of unintentional delay.

For the reasons above, the petition under 37 CFR 1.55(e) is **GRANTED**.

Applicant is advised that the inclusion of a prior-filed application on any patent, published application

, or certificate of correction should not be construed as meaning that the present application is necessarily entitled to the benefit of the prior-filed application. In order for an application to be entitled to the benefit of the prior-filed application, all other requirements under 35 U.S.C. 119 and 37 CFR 1.55 must be met.

This application is being referred to the Office of Publications for appropriate action.

/George Dombroske/
GEORGE DOMBROSKE
PCT Legal Examiner
International Patent Legal Administration
(571)272-3283

ATTACHMENT: corrected filing receipt



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United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
17/170,922	02/09/2021	2463	1820	KT21-0101C1	20	3

CONFIRMATION NO. 1018
CORRECTED FILING RECEIPT

126667
INVENSTONE PATENT, LLC
7925 Jones Branch Dr Suite 3100-A
McLean, VA 22102



Date Mailed: 11/17/2022

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Kyujin PARK, Seoul, KOREA, REPUBLIC OF;
Woo-jin CHOI, Seoul, KOREA, REPUBLIC OF;

Applicant(s)

KT CORPORATION, Gyeonggi-do, KOREA, REPUBLIC OF;

Assignment For Published Patent Application

KT CORPORATION, Gyeonggi-do, KOREA, REPUBLIC OF

Power of Attorney: The patent practitioners associated with Customer Number 126667

Domestic Priority data as claimed by applicant

This application is a CON of 16/346,108 04/29/2019 PAT 10952206
which is a 371 of PCT/KR2017/012105 10/30/2017

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.)

REPUBLIC OF KOREA 10-2017-0140898 10/27/2017 No Access Code Provided
REPUBLIC OF KOREA 10-2016-0143013 10/31/2016 No Access Code Provided

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: No

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 02/19/2021

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/170,922**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No

Title

METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR
NEXT-GENERATION WIRELESS ACCESS NETWORK

Preliminary Class

370

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

page 2 of 4

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

PART B—FEE(S) TRANSMITTAL

Complete and send this form, together with the applicable fee(s), to: MailMail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22314-1450
(571)-273-2885

or Fax

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note Use Block 1 for any change of address)

INVENSTONE PATENT, LLC.
7925 Jones Branch Dr Suite 3100-A
McLean VA 22102

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, EFS-Web transmitted, or facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's Name)
(S-signature)
(Date)

APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO	CONFIRMATION NO
17/170,922	02/09/2021	Kyujin PARK	KT21-0101C1	1018

TITLE OF INVENTION: METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK

APPLN: TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0	\$0	\$1200	11/16/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
YEUNG, MANG HANG	2463	370-330000

- | | | |
|---|---|---------------------------------------|
| 1. Change of correspondence address or indication of "Fee Address" (37CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required. | 2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered attorney or agent. If no name is listed, no name will be printed | 1. INVENSTONE Patent, LLC
2.
3. |
|---|---|---------------------------------------|

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)
PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.
- 1a. NAME OF ASSIGNEE
KT CORPORATION
- (B) RESIDENCE: (CITY and STATE OR COUNTRY)
Gyeonggi-do, KOREA

Please check the appropriate assignee categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

- | | |
|---|---|
| 4a. The following fee(s) are submitted:
☒ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies | 4b. Payment of Fees(s): (Please first reapply and previously paid fee shown above)
☐ A check is enclosed
☐ Payment by credit card. Form PTO-2038 is attached
☒ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 60-2040 (enclose an extra copy of this form) |
|---|---|

5. Change of Entity Status (from status indicated above)
- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ☐ Applicant changing to regular undiscounted fee status.
NOTE: Checking this box will be taken to be notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Daniel CHUNG/
Typed or printed name Daniel CHUNGDate November 16, 2022
Registration No. 57,889

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal				
Application Number:		17170922		
Filing Date:		09-Feb-2021		
Title of Invention:		METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		
First Named Inventor/Applicant Name:		Kyujin PARK		
Filer:		Daniel Chung/judy Kim		
Attorney Docket Number:		KT21-0101C1		
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	1501	1	1200	1200

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1200

Electronic Acknowledgement Receipt	
EFS ID:	47040530
Application Number:	17170922
International Application Number:	
Confirmation Number:	1018
Title of Invention:	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK
First Named Inventor/Applicant Name:	Kyujin PARK
Customer Number:	126667
Filer:	Daniel Chung/judy Kim
Filer Authorized By:	Daniel Chung
Attorney Docket Number:	KT21-0101C1
Receipt Date:	16-NOV-2022
Filing Date:	09-FEB-2021
Time Stamp:	21:48:38
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$ 1200
RAM confirmation Number	E2022AFL49273768
Deposit Account	602040
Authorized User	judy Kim
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees) 37 CFR 1.20 (Post Issuance fees) 37 CFR 1.21 (Miscellaneous fees and charges)					
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	KT21-0101C1_PTOL85b_KT.pdf	157599	no	2
			2fa3262ddad6975337072dd1448e9482753e96024		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	37799	no	2
			1367d119738a4efefe96dfb5881badf694bcc30		
Warnings:					
Information:					
Total Files Size (in bytes):			195398		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

Doc Code: PET.OP

Document Description: Petition for Review by the Office of Petitions

PTO/SB/458 (09-22)

Approved for use through 05/31/2024. OMB 0651-0032

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**PETITION TO ACCEPT AN UNINTENTIONALLY DELAYED CLAIM UNDER
35 U.S.C. 119(a)-(d) OR (f), 365(a) OR (b), OR 386(a) OR (b)
FOR THE RIGHT OF PRIORITY TO A PRIOR-FILED FOREIGN APPLICATION (37 CFR 1.55(e))**

Page 1 of 5

First named inventor: Kyujin PARK
Application No.: 17/170,922 Art Unit: 2463
Filed: February 9, 2021 Examiner: Yeung, Mang Hang
Title: METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR
NEXT-GENERATION WIRELESS ACCESS NETWORK

Attention: Office of Petitions

Mail Stop Petition

Commissioner for Patents

P. O. Box 1450

Alexandria, VA 22313-1450

FAX 571-273-8300

NOTE: If information or assistance is needed in completing this form, please contact the Office of Petitions at 571-272-3282.

APPLICANT HEREBY PETITIONS FOR ACCEPTANCE OF AN UNINTENTIONALLY DELAYED PRIORITY CLAIM UNDER 37 CFR 1.55(e).

NOTE: A nonprovisional application must be filed within 12 months (six months in the case of a design application) of the filing date of the foreign application, or be entitled to claim the benefit under 35 U.S.C. 120, 121, 365(c), or 386(c) of an application that was filed within twelve months (six months in the case of a design application) of the filing date of the foreign application, except as provided in 37 CFR 1.55(c).

NOTE: A grantable petition requires the following items:

- (1) the priority claim in an application data sheet identifying the foreign application to which priority is claimed by the application number, country (or intellectual property authority), and the filing date, unless previously submitted;
- (2) a certified copy of the foreign application, unless previously submitted or an exception in paragraph (h), (i), or (j) of 37 CFR 1.55 applies;
- (3) the petition fee set forth in 37 CFR 1.17(m); and
- (4) a statement that the entire delay between the date the priority claim was due under 37 CFR 1.55(d) and the date the claim was filed was unintentional. The Director may require additional information where there is a question whether the delay was unintentional.

1. The required priority claim:

- ☒ The above-identified application was filed on or after September 16, 2012, and the priority claim is either set forth in the attached corrected application data sheet (ADS) or in a corrected ADS that was previously submitted.
- ☐ The application was filed prior to September 16, 2012, and the priority claim is either (1) set forth in the attached supplemental ADS or in a supplemental ADS that was previously submitted, or (2) in the attached oath or declaration under 37 CFR 1.63 or in an oath or declaration under 37 CFR 1.63 that was previously submitted. See 37 CFR 1.55(n).

Reminder: Any ADS which corrects or updates the information of record must comply with 37 CFR 1.76(c)(2) (or for applications filed prior to September 16, 2012, pre-AIA 37 CFR 1.76(c)).

A Federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with an information collection subject to the requirements of the Paperwork Reduction Act of 1995, unless the information collection has a currently valid OMB Control Number. The OMB Control Number for this information collection is 0651-0032. Public burden for this form is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. Send comments regarding this burden estimate or any other aspect of this information collection, including suggestions for reducing this burden to the Chief Administrative Officer, United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450 or email InformationCollection@uspto.gov. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

**PETITION TO ACCEPT AN UNINTENTIONALLY DELAYED CLAIM UNDER
35 U.S.C. 119(a)-(d) OR (f), 365(a) OR (b), OR 386(a) OR (b)
FOR THE RIGHT OF PRIORITY TO A PRIOR-FILED FOREIGN APPLICATION (37 CFR 1.55(e))**

Page 2 of 5

2. Certified copy of the foreign application:

- ☐ is enclosed herewith.
- ☒ has been previously submitted.
- ☐ has not been submitted because an exception in paragraph (h), (i), or (j) of 37 CFR 1.55 applies.

3. Petition fee (37 CFR 1.17(m)):

- ☐ Other than a small or micro entity (undiscounted) fee \$ 2100 (Fee Code 1454).
- ☐ Small entity fee \$ _____ (Fee Code 2454). Applicant asserts small entity status. See 37 CFR 1.27.
- ☐ Micro entity fee \$ _____ (Fee Code 3454). Applicant has established or is establishing micro entity status. See 37 CFR 1.29. Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

4. Statement: The entire delay between the date the priority claim was due under 37 CFR 1.55(d) and the date the priority claim was filed was unintentional.

Petitioner is reminded that a change in circumstance or a delay resulting from a deliberately chosen course of action does not become an "unintentional" delay because, for example:

- the applicant does not consider any patent to be of sufficient value to justify the financial expense of obtaining the patent; or
- the applicant remains interested in eventually obtaining a patent, but simply seeks to defer patent fees and patent prosecution expenses.

NOTE: Where the petition under 37 CFR 1.55(e) is filed more than two years after the date the priority or benefit claim was due, the United States Patent and Trademark Office requires an additional explanation of the circumstances surrounding the delay that establishes the entire delay was unintentional. This requirement is in addition to the requirement to provide a statement that the entire delay was unintentional. See *Clarification of the Practice for Requiring Additional Information in Petitions Filed in Patent Applications and Patents Based on Unintentional Delay*, 85 FR 12222 (March 2, 2020). See MPEP 711.03(c)(II)(C)-(F) for additional guidance on the information required to establish that the entire delay was unintentional.

- ☐ Because this petition under 37 CFR 1.55(e) is being filed more than two years after the date the priority or benefit claim was due, additional explanation of the circumstances surrounding the delay that establishes the entire delay was unintentional is enclosed herewith.

**Instructions for Petition to Accept an Unintentionally Delayed Claim under
35 U.S.C. 119(a)-(d) or (f), 365(a) or (b), or 386(a) or (b) for the
Right of Priority to a Prior-Filed Foreign Application (37 CFR 1.55(e))**

(Not to be Submitted to the USPTO)

Note: This form is for unintentionally delayed priority claims to a prior-filed foreign application(s) only.

1. The priority claim under 35 U.S.C. 119(a)-(d) and (f), 365(a) or (b), or 386(a) or (b):

a. For applications filed on or after September 16, 2012, the reference must be set forth in a corrected application data sheet (ADS). See 37 CFR 1.76.

Note: Any ADS filed after the filing of the application is considered a corrected (or updated) ADS even if an ADS was not previously submitted. A corrected ADS must identify the information that is being changed with underlining for insertions and strike-through or brackets for text removed. In general, the identification of the information being changed should be made relative to the most recent filing receipt. For example, where the most recent filing receipt for the application shows no benefit claim, the entire benefit claim must be shown with underlining in the corrected ADS. In addition, if the ADS identified an incorrect provisional application number and the most recent filing receipt included the incorrect provisional application number, the corrected ADS should identify the incorrect provisional application number being deleted with strike-through or brackets, and should identify the correct provisional application number being added with underlining. For more information regarding a corrected ADS in an application filed on or after September 16, 2012, see MPEP 601.05(a), subsection II.

A corrected ADS may include all of the section headings listed in 37 CFR 1.76(b) with all appropriate data for each heading or only those sections (including the section headings) containing changed or updated information. See 37 CFR 1.76(c)(2). A corrected ADS must identify the application by application number and be properly signed.

Use of the corrected Web-based ADS is recommended for registered users of EFS-Web or Patent Center because it will pre-populate with information of record; applicants can then type in the desired changes, and the system will create a PDF version with the appropriate strike-through and underlining. For more information, see the "Quick Start Guide for Corrected Web-based Application Data Sheet (Corrected Web ADS)" available at <https://www.uspto.gov/patents-application-process/applying-online/efswweb-guidance-and-resources>.

Applicants may also use Form PTO/AIA/14, which may be printed and marked up to comply with 37 CFR 1.76(c).

[Page 4 of 5]

**Instructions for Petition to Accept an Unintentionally Delayed Claim under
35 U.S.C. 119(a)-(d) or (f), 365(a) or (b), or 386(a) or (b) for the
Right of Priority to a Prior-Filed Foreign Application (37 CFR 1.55(e))**

(Not to be Submitted to the USPTO)

b. For applications filed before September 16, 2012, the reference to the prior-filed application may be made in a supplemental ADS in compliance with pre-AIA 37 CFR 1.76(c) or in an oath or declaration under 37 CFR 1.63, although the Office prefers the use of an ADS.

Note: For applications filed before September 16, 2012, any ADS submitted after the filing date of the application is a supplemental ADS, regardless of whether an original ADS was submitted with the application papers on filing. Supplemental ADS papers must be labeled Supplemental ADS or Supplemental Application Data Sheet, include each of the seven section headings listed in pre-AIA 37 CFR 1.76(b) with all appropriate data for the section heading, and identify the information that is being changed. See pre-AIA 37 CFR 1.76(c). A supplemental ADS must also identify the application by application number and be properly signed. For more information regarding a supplemental ADS in an application filed before September 16, 2012, see MPEP 601.05(b), subsection II.

2. The certified copy of the foreign application:

NOTE: Petitioner is directed to the appropriate sections of the regulation, 37 CFR 1.55(h), (i) or (j), for additional requirements for meeting the relevant exception to the requirement to submit a certified copy of the foreign priority document. For more information on the certified copy requirement and these exceptions, see MPEP 215 *et seq.*

Petitioner must file a certified copy of the foreign application, unless one of the exceptions in paragraph (h) (Certified copy in another U.S. patent or application); (i) (Foreign intellectual property office participating in a priority document exchange agreement), or (j) (A copy of the original foreign application clearly labeled as "Interim Copy," is filed in the Office), of 37 CFR 1.55 apply.

3. Petition fee:

The petition fee is set forth in 37 CFR 1.17(m) and must be included with the petition. Petitioner is advised to refer to the current fee schedule at <https://www.uspto.gov/learning-and-resources/fees-and-payment/uspto-fee-schedule>.

4. Statement:

37 CFR 1.55(e) requires a statement that the entire delay between the date the claim was due under 37 CFR 1.55(d) and the date the claim was filed was unintentional. The statement has been included in this form.

Note: the Director may require additional information where there is a question whether the delay was unintentional.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:	Kyujin PARK et al.	Examiner: YEUNG, MANG HANG
Application No.:	17/170,922	Group Art Unit: 2463
Filing Date:	February 9, 2021	Confirmation No.: 1018
For:	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK	

Mail Stop ISSUE FEE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PETITION UNDER 37 C.F.R. 1.55

Please consider the following:

Remarks begin on page 2.

An **Appendix** including renewal petition is attached following page 3.

REMARKS

Application status

A Notice of Allowance dated August 16, 2022, has issued.

Applicant petitions the Office for acceptance of an unintentionally delayed claim of priority under 35 U.S.C. 119(e).

Petition under 37 C.F.R. 1.55(e)

1. The Office is advised that the claim for foreign priority has been presented in an application data sheet (ADS) as required by 37 CFR 1.55(e)(1). The ADS was corrected and filed on September 14, 2021.
2. The Office is advised that a certified copy of the foreign application was included in the filing of parent application No. 16/346,108.
3. The Office is advised that the petition fee set forth in 37 CFR 1.17(m) was submitted with an earlier filing of September 14, 2021.
4. The Office is advised of Applicant's statement that the entire delay between the date the benefit claim was due under 37 CFR 1.55(d) and the date the benefit claim was filed was unintentional.

Conclusion

No additional fees are believed to be necessitated by this Petition. If any other fees are determined to be due with this filing, the Director is authorized to charge any such fees, or credit any overpayment, to our Deposit Account No. 602040, referencing the Docket No. stated above.

Respectfully Submitted,

Date: October 6, 2022

By /Daniel J. Chung/
Daniel J. Chung
Registration No. 57,889

INVENSTONE PATENT, LLC
7925 Jones Branch Dr Suite 3100-A
McLean VA 22102
703-879-5205

Electronic Acknowledgement Receipt	
EFS ID:	46769707
Application Number:	17170922
International Application Number:	
Confirmation Number:	1018
Title of Invention:	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK
First Named Inventor/Applicant Name:	Kyujin PARK
Customer Number:	126667
Filer:	Daniel Chung/judy Kim
Filer Authorized By:	Daniel Chung
Attorney Docket Number:	KT21-0101C1
Receipt Date:	06-OCT-2022
Filing Date:	09-FEB-2021
Time Stamp:	16:15:53
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment		no			
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Petition for review by the Office of Petitions	KT21-0101C1_sb0458.pdf	284357	no	6
			11e388be5bcf45f8ebec17c75ed3345f5f162f61		
Warnings:					

Information:					
2	Transmittal Letter	KT21-0101C1_Remarks_on_Petition_files_after_NOA.pdf	22979 f09aa11084c544c8d99ccc04a2d03501be8510a3	no	3
Warnings:					
Information:					
Total Files Size (in bytes):			307336		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/170,922	02/09/2021	Kyujin PARK	KT21-0101C1	1018
126667	7590	09/12/2022		
INVENSTONE PATENT, LLC 7925 Jones Branch Dr Suite 3100-A McLean, VA 22102			EXAMINER YEUNG, MANG HANG	
			ART UNIT	PAPER NUMBER
			2463	
			NOTIFICATION DATE	DELIVERY MODE
			09/12/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

dan@invenstonepat.com
mail@invenstonepat.com

<i>Examiner-Initiated Interview Summary</i>	Application No. 17/170,922	Applicant(s) PARK et al.		
	Examiner MANG HANG YEUNG	Art Unit 2463	AIA (First Inventor to File) Status Yes	Page 1 of 1

All Participants (applicant, applicants representative, PTO personnel)	Title	Type
MANG HANG YEUNG	Primary Examiner	Telephonic
Daniel Chung	Agent	

Date of Interview: 26 August 2022

Issues Discussed:

Other

To inform the Applicant about the priority issue for this application. Applicant is currently in an attempt to correct the priority issue, and may take a longer time to fix it.

/MANG HANG YEUNG/ Primary Examiner, Art Unit 2463	
Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04 Please further see: MPEP 713.04 Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b) 37 CFR § 1.2 Business to be transacted in writing	

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

<i>Examiner-Initiated Interview Summary</i>	Application No. 17/170,922	Applicant(s) PARK et al.		
	Examiner MANG HANG YEUNG	Art Unit 2463	AIA (First Inventor to File) Status Yes	Page 1 of 1

All Participants (applicant, applicants representative, PTO personnel)	Title	Type
MANG HANG YEUNG	Primary Examiner	Telephonic
Daniel Chung	Agent	

Date of Interview: 26 August 2022

Issues Discussed:

Other

To inform the Applicant the priority issue for this application. Applicant is currently in an attempt to correct the priority issue, and may take a longer time to fix it.

/MANG HANG YEUNG/ Primary Examiner, Art Unit 2463	
Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04 Please further see: MPEP 713.04 Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b) 37 CFR § 1.2 Business to be transacted in writing	

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

Doc Code: ECOMM.AUTH/ECOMM.WTDW

Doc Description: Internet Communications Authorized/Internet Communications Authorization Withdrawn

PTO/SB/439 (11-15)

AUTHORIZATION FOR INTERNET COMMUNICATIONS IN A PATENT APPLICATION OR REQUEST TO WITHDRAW AUTHORIZATION FOR INTERNET COMMUNICATIONS	Application No.	17/170,922
	Filing Date	02-09-2021
	First Named Inventor	Kyujin PARK
	Art Unit	2463
	Examiner Name	YEUNG, MANG HANG
	Practitioner Docket No.	KT21-0101C1

To: Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I. To authorize permission for Internet Communications.

☒ Recognizing that Internet communications are not secure, I hereby authorize the USPTO to communicate with the undersigned and practitioners in accordance with 37 CFR 1.33 and 37 CFR 1.34 concerning any subject matter of this application via video conferencing, instant messaging, or electronic mail. I understand that a copy of these communications will be made of record in the application file. (MPEP 502.03)

II. To withdraw authorization for Internet Communications.

☐ The authorization given on _____, to the USPTO to communicate with the undersigned and any practitioner in accordance with 37 CFR 1.33 and 37 CFR 1.34 concerning any subject matter of this application via Internet communications such as video conferencing, instant messaging, or electronic mail is hereby withdrawn. I understand that the withdrawal is effective when approved rather than when received.

I am the

- ☐ applicant.
- ☒ attorney or agent of record. Registration number 57,889.
- ☐ attorney or agent acting under 37 CFR 1.34. Registration number _____.

/Daniel J. Chung/
Signature

Aug. 08, 2022
Date

Daniel J. Chung
Typed or printed name

703-879-5205
Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Juristic entities must be represented by a patent practitioner (see 37 CFR 1.31, which is applicable to any paper filed on or after September 16, 2012, that is presented on behalf of a juristic entity, regardless of application filing date). Submit multiple forms if more than one signature is required, see below*.

☐ * Total of _____ forms are submitted.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt	
EFS ID:	46501562
Application Number:	17170922
International Application Number:	
Confirmation Number:	1018
Title of Invention:	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK
First Named Inventor/Applicant Name:	Kyujin PARK
Customer Number:	126667
Filer:	Daniel Chung
Filer Authorized By:	
Attorney Docket Number:	KT21-0101C1
Receipt Date:	28-AUG-2022
Filing Date:	09-FEB-2021
Time Stamp:	23:23:57
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no				
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Internet Communications Authorization	17170922_sb0439.pdf	89232 9e4b85ec725f0a35a61c40e042e5a5fe6465bd1d	no	2
Warnings:					

Information:	
Total Files Size (in bytes):	89232
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.	



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

126667 7590 08/16/2022
INVENSTONE PATENT, LLC
7925 Jones Branch Dr Suite 3100-A
McLean, VA 22102

EXAMINER

YEUNG, MANG HANG

ART UNIT

PAPER NUMBER

2463

DATE MAILED: 08/16/2022

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/170,922	02/09/2021	Kyujin PARK	KT21-0101C1	1018

TITLE OF INVENTION: METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	11/16/2022

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

126667 7590 08/16/2022
INVENSTONE PATENT, LLC
7925 Jones Branch Dr Suite 3100-A
McLean, VA 22102

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/170,922	02/09/2021	Kyujin PARK	KT21-0101C1	1018

TITLE OF INVENTION: METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	11/16/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
YEUNG, MANG HANG	2463	370-330000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/170,922	02/09/2021	Kyujin PARK	KT21-0101C1	1018
126667 7590 08/16/2022 INVENSTONE PATENT, LLC 7925 Jones Branch Dr Suite 3100-A McLean, VA 22102			EXAMINER YEUNG, MANG HANG	
			ART UNIT	PAPER NUMBER
			2463	
DATE MAILED: 08/16/2022				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.** Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 17/170,922	Applicant(s) PARK et al.	
	Examiner MANG HANG YEUNG	Art Unit 2463	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 02/09/2021.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 23-42. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov**.

4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☒ All b) ☐ Some* c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☒ Certified copies of the priority documents have been received in Application No. 16346108.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)	5. ☐ Examiner's Amendment/Comment
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.	6. ☒ Examiner's Statement of Reasons for Allowance
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.	7. ☐ Other _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	

/MANG HANG YEUNG/ Primary Examiner, Art Unit 2463	
--	--

DETAILED ACTION

1. The instant application having Application No. **17/170922** filed on **02/09/2021** is presented for examination by the examiner.

Notice of Pre-AIA or AIA Status

2. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Allowable Subject Matters

3. **Claims 23-42** are allowed. The following is an examiner's statement of reasons for allowance.

a. **Claims 23, 30, 37** are allowed over the prior art of record because the Examiner found neither prior art cited in its entirety, nor based on the prior art found any motivation to combine any of the said prior art reference which teach the limitation "wherein the determined number of OFDM symbols is smaller than or equal to a number of OFDM symbols included in a slot; and transmitting, to the wireless device, downlink control information (DCI), including a field including a bit string, wherein the bit string in the field relates to a row index of an allocation table, and wherein the allocation table includes information on a starting OFDM symbol and the number of the OFDM symbols which is smaller than or equal to the number of OFDM symbols included in the slot" with respect to the additional claimed subject matter and in particular the specific boundaries as recited in the claim. It is noted that the closest prior art, Kim et al. (US 2015/0049625

A1) discloses “(par. 0142), the eNB may trigger a desired feedback type index over a PDCCH/EPDCCH according to a feedback type index configuration methods as Table 4 delivered through RRC signaling. In a method to implement such dynamic triggering, a feedback type index requesting CSI feedback may be indicated with 3 bits. That is, in Table 4, 3 bits corresponding to [encoding] of a feedback type index may be contained in DCI. For example, in the case in which DCI contains 100 as bits for a corresponding feedback type index, feedback type index 4 may be requested. In another method to implement dynamic triggering, a bitmap for all feedback type indexes requesting CSI feedback may be used. For example, bitmap 1110001 may indicate that the UE is instructed to feed back feedback type indexes 1, 2, 3, and 7. Herein, bits which may be indicated over a PDCCH are limited, the number of possible combinations among all possible feedback type indexes (through, for example, RRC signaling) may be limited. For example, if available feedback type indexes are restricted to indexes 1, 2, 3 and 7, only two bits may be needed to indicate a feedback type index.”.

b. However, Kim fails to disclose at least the claim limitations “wherein the determined number of OFDM symbols is smaller than or equal to a number of OFDM symbols included in a slot; and transmitting, to the wireless device, downlink control information (DCI), including a field including a bit string, wherein the bit string in the field relates to a row index of an allocation table, and wherein the allocation table includes information on a starting OFDM symbol and the number of the OFDM symbols which is smaller than or equal to the number of OFDM symbols included in the slot”. Thus, Kim does not disclose or render obvious the above underlined limitations as

claimed. **Claims 24-29, 31-36, 38-42** are also allowed since they depend on claims 23, 30 and 37 respectively.

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. US Patent Publications:
 - i. Yang et al. (US 2016/0150462 A1).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MANG HANG YEUNG whose telephone number is (571)270-7319. The examiner can normally be reached on M-F 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pankaj Kumar can be reached on (571) 272-3011. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 17/170,922
Art Unit: 2463

Page 5

/MANG HANG YEUNG/

Primary Examiner, Art Unit 2463

Notice of References Cited	Application/Control No. 17/170,922		Applicant(s)/Patent Under Reexamination PARK et al.	
	Examiner MANG HANG YEUNG		Art Unit 2463	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20160150462-A1	05-2016	YANG; Suckchel	H04W74/0833	370/254
*	B	US-20150049625-A1	02-2015	Kim; Kijun	H04B7/0619	370/252
	C					
	D					
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	G					
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	K					
	L					
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FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
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	R					
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
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	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes 	Application/Control No. 17/170,922	Applicant(s)/Patent Under Reexamination PARK et al.
	Examiner MANG HANG YEUNG	Art Unit 2463

CPC - Searched*		
Symbol	Date	Examiner
(H04W72/044 OR H04L1/16 OR H04L1/18 OR H04L5/00 OR H04L5/0007 OR H04L5/0037 OR H04W72/04 OR H04W72/042 OR H04L1/12 OR H04L5/0044 OR H04L5/0091).cpc.	08/10/2022	/M.Y./

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
370	330	08/10/2022	/M.Y./

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
(H04W72/044 OR H04L1/16 OR H04L1/18 OR H04L5/00 OR H04L5/0007 OR H04L5/0037 OR H04W72/04 OR H04W72/042 OR H04L1/12 OR H04L5/0044 OR H04L5/0091).cpc. with limited text searching (See PE2E search history)	08/10/2022	/M.Y./
370/330 with limited text searching (See PE2E search history)	08/10/2022	/M.Y./
NPL search (Google scholar)	08/10/2022	/M.Y./
Inventor search (Palm and PE2E)	08/10/2022	/M.Y./
PLUS search	08/10/2022	/M.Y./

/MANG HANG YEUNG/ Primary Examiner, Art Unit 2463	
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<i>Search Notes</i> 	Application/Control No. 17/170,922	Applicant(s)/Patent Under Reexamination PARK et al.
	Examiner MANG HANG YEUNG	Art Unit 2463

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
	(H04W72/044 OR H04L1/16 OR H04L1/18 OR H04L5/00 OR H04L5/0007 OR H04L5/0037 OR H04W72/04 OR H04W72/042 OR H04L1/12 OR H04L5/0044 OR H04L5/0091).cpc	08/10/2022	/M.Y./
370	330	08/10/2022	/M.Y./

/MANG HANG YEUNG/ Primary Examiner, Art Unit 2463	
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<i>Index of Claims</i> 	Application/Control No. 17/170,922	Applicant(s)/Patent Under Reexamination PARK et al.
	Examiner MANG HANG YEUNG	Art Unit 2463

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS										
☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47										
CLAIM			DATE							
Final	Original	08/10/2022								
	1	-								
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	3	-								
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14	36	=								
15	37	=								
16	38	=								
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18	40	=								
19	41	=								
20	42	=								

Issue Classification 	Application/Control No. 17/170,922	Applicant(s)/Patent Under Reexamination PARK et al.
	Examiner MANG HANG YEUNG	Art Unit 2463

CPC						
Symbol					Type	Version
H04W	/	72	/	044	F	2013-01-01
H04L	/	5	/	0007	I	2013-01-01
H04L	/	5	/	0037	I	2013-01-01
H04W	/	72	/	042	I	2013-01-01
H04L	/	5	/	00	I	2013-01-01
H04L	/	1	/	16	I	2013-01-01
H04W	/	72	/	04	I	2013-01-01
H04L	/	1	/	18	I	2013-01-01
H04L	/	1	/	12	A	2013-01-01

CPC Combination Sets				
Symbol	Type	Set	Ranking	Version
/				

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/MANG HANG YEUNG/ Primary Examiner, Art Unit 2463	10 August 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	fig.4

U.S. Patent and Trademark Office

Part of Paper No.: 20220810

Issue Classification 	Application/Control No. 17/170,922	Applicant(s)/Patent Under Reexamination PARK et al.
	Examiner MANG HANG YEUNG	Art Unit 2463

INTERNATIONAL CLASSIFICATION			
CLAIMED			
H04W	/	4	/ 00

NON-CLAIMED			
/		/	

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS
370	330

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/MANG HANG YEUNG/ Primary Examiner, Art Unit 2463	10 August 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	fig.4

U.S. Patent and Trademark Office

Part of Paper No.: 20220810

Issue Classification 	Application/Control No. 17/170,922	Applicant(s)/Patent Under Reexamination PARK et al.
	Examiner MANG HANG YEUNG	Art Unit 2463

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		10		19	6	28	15	37						
	2		11		20	7	29	16	38						
	3		12		21	8	30	17	39						
	4		13		22	9	31	18	40						
	5		14	1	23	10	32	19	41						
	6		15	2	24	11	33	20	42						
	7		16	3	25	12	34								
	8		17	4	26	13	35								
	9		18	5	27	14	36								

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/MANG HANG YEUNG/ Primary Examiner, Art Unit 2463	10 August 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	fig.4

U.S. Patent and Trademark Office

Part of Paper No.: 20220810

Bibliographic Data

Application No: 17/170,922

Foreign Priority claimed: ☒ Yes ☐ No

35 USC 119 (a-d) conditions met: ☒ Yes ☐ No ☐ Met After Allowance

Verified and Acknowledged: /MANG HANG YEUNG/

Examiner's Signature

Initials

Title:

METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL
RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS
NETWORK

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
02/09/2021	370	2463	KT21-0101C1
RULE			

APPLICANTS

KT CORPORATION, Gyeonggi-do, KOREA, REPUBLIC OF

INVENTORS

Kyujin PARK, Seoul, KOREA, REPUBLIC OF

Woo-jin CHOI, Seoul, KOREA, REPUBLIC OF

CONTINUING DATA

This application is a CON of 16346108 04/29/2019 PAT 10952206

16346108 is a 371 of PCT/KR2017/012105 10/30/2017

FOREIGN APPLICATIONS

KOREA, REPUBLIC OF KR10-2016-0143013 10/31/2016

KOREA, REPUBLIC OF KR10-2017-0140898 10/27/2017

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UNITED STATES

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Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)

Approved for use through 11/30/2020. OMB 0651-0031

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	
	Filing Date	
	First Named Inventor	Kyujin PARK
	Art Unit	
	Examiner Name	
	Attorney Docket Number	KT21-0101C1

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	1	20140376422	A1	2014-12-25	Dai et al.		
	2	20140105191	A1	2014-04-17	Yang et al.		
	3	20190289605	A1	2019-09-19	FUTAKI		
	4	20150236828	A1	2015-08-20	Jonghyun Park et al.		
	5	20150215906	A1	2015-07-30	Jonghyun Park et al.		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	Kyujin PARK	
	Art Unit		
	Examiner Name		
	Attorney Docket Number		KT21-0101C1

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7	20150229451	A1	2015-08-13	Jonghyun Park et al.	
8	20150289235	A1	2015-10-08	Jonghyun Park et al.	
9	20150208392	A1	2015-07-23	Jonghyun Park et al.	
10	20150016369	A1	2015-01-15	Jonghyun Park et al.	
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	Kyujin PARK	
	Art Unit		
	Examiner Name		
	Attorney Docket Number		KT21-0101C1

	17	20170006589	A1	2017-01-05	Jonghyun Park et al.	
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	22	20170208569	A1	2017-07-20	Jonghyun Park et al.	
	23	20170303252	A1	2017-10-19	Jonghyun Park et al.	
	24	20170208572	A1	2017-07-20	Jonghyun Park et al.	
	25	20170273061	A1	2017-09-21	Jonghyun Park et al.	
	26	20170353282	A1	2017-12-07	Jonghyun Park et al.	
	27	20170078066	A1	2017-03-16	Jonghyun Park et al.	

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	First Named Inventor	Kyujin PARK	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	KT21-0101C1	

28	20170257855	A1	2017-09-07	Jonghyun Park et al.	
29	20180070337	A1	2018-03-08	Jonghyun Park et al.	
30	20170257853	A1	2017-09-07	Jonghyun Park et al.	
31	20170195098	A1	2017-07-06	Jonghyun Park et al.	
32	20180160409	A1	2018-06-07	Jonghyun Park et al.	
33	20180227893	A1	2018-08-09	Jonghyun Park et al.	
34	20120287848	A1	2012-11-15	Hak Seang Kim et al.	
35	20140348057	A1	2014-11-27	Hak Seang Kim et al.	

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	1	10-2015-0060677	KR	A	2015-06-03	LG ELECTRONICS INC.		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	Kyujin PARK	
	Art Unit		
	Examiner Name		
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	2	10-2011-0088432	KR	A	2011-08-03	LG ELECTRONICS INC.	
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	1	NTEL CORPORATION, "On PUCCH coverage enhancement", R1-1609537, 3GPP TSG-RAN WG1 #86bis, Lisbon, Portugal, 10th - 14th October, 2016, pp. 1-5	
	2	EUROPEAN PATENT OFFICE, European Search Report of corresponding EP Patent Application No. 17865576.7, April 29, 2020	
	3	MOTOROLA MOBILITY, "Flexible frame structure and control signaling for NR", R1-1609919, 3GPP TSG RAN WG1 #86bis, Lisbon, Portugal, Oct 10-14, 2016, pp. 1-4	
	4	NTT DOCOMO, INC., "Remaining details on PUSCH resource allocation and scheduling design for eLAA", R1-167343, 3GPP TSG RAN WG1 Meeting #86, Gothenburg, Sweden 22nd - 26th August 2016, pp. 1-5	
	5	ERICSSON, "Handling overlapping allocations with short and 1 ms TTI", R1-167503, 3GPP TSG-RAN WG1 #86, Goteborg, Sweden, 22th - 26th August 2016, pp. 1-2	

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	Filing Date		
	First Named Inventor	Kyujin PARK	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	KT21-0101C1	

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Daniel CHUNG/	Date (YYYY-MM-DD)	2021-02-09
Name/Print	Daniel CHUNG	Registration Number	57889

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	1	"16346108"	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/28 05:04 PM
L2	2	"20190261337"	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/28 05:05 PM
L3	629	uplink adj2 grant with slot	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 09:39 AM
L4	116	uplink adj2 grant with slot with allocat\$3 and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 09:39 AM
L5	112	uplink adj2 grant with slot with PUSCH and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 09:40 AM
L6	6	uplink adj2 grant with mini\$1slot same PUSCH and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 09:55 AM
L7	9	uplink adj2 grant with mini\$1slot\$1 same PUSCH and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 09:57 AM
L8	20	uplink adj2 grant same mini\$1slot\$1 same PUSCH and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 09:57 AM
L9	20	uplink adj2 grant same mini adj2 slot\$1 same PUSCH and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 09:59 AM
L10	20	uplink adj2 grant same mini adj2 (frame\$1 slot\$1) same PUSCH and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 10:48 AM
L11	630	uplink adj2 grant same (frame\$1 slot\$1) same PUSCH and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 10:48 AM
L12	122	("7724697" "7839829" "7843877" "7848308" "7903818" "7912133" "7917137" "7936731" "8000273" "8000711")	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 11:25 AM

L13	56	"8009606" "8018855" "8032088" "8036110" "8046020" "8050202" "8059524" "8059632" "8059765" "8064382" "8072911" "8077670" "8078170" "7903818" "7912133" "7917137" "7936731" "8000273" "8000711" "8009606" "8018855" "8032088" "8036110" "8046020" "8050202" "8059524" "8059632" "8059765" "8064382" "8072911" "8077670" "8078170" "8107416" "8107883" "8121083" "8130812" "8131295" "8140083" "8145151" "8155063").pn. (US-20110088432-\$ US-20150060677-\$ US-0060677-\$ US- 0088432-\$ US- 1609919-\$ US- 16346108-\$ US- 20120287848-\$ US- 20140348057-\$ US- 20150016369-\$ US- 20150023265-\$ US- 20150029966-\$ US- 20150173064-\$ US- 20150180625-\$ US- 20150208392-\$ US- 20150215905-\$ US- 20150215906-\$ US- 20150223208-\$ US- 20150229451-\$ US- 20150236828-\$ US- 20150282126-\$ US- 20150289235-\$ US- 20160128037-\$ US- 20160278055-\$ US- 20170006589-\$ US- 20170064678-\$ US- 20170078066-\$ US- 20170079018-\$ US- 20170195098-\$ US- 20170208569-\$ US- 20170208572-\$ US- 20170257853-\$ US- 20170257855-\$ US- 20170273061-\$ US- 20170303252-\$ US- 20170353282-\$ US- 20180070337-\$ US- 20180160409-\$ US-	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 11:28 AM
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L14	2214	20180227893-\$).DID. uplink adj2 grant same (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) same PUSCH and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 11:29 AM
L15	252461	(H04W72/044 or H04L1/18 or H04L5/00 or H04L1/16 or H04W72/04 or H04L5/0007 or H04L5/0037 or H04W72/042 or H04L1/12 or H04L5/0053 or H04L5/0094 or H04L5/0044).cpc.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 11:29 AM
L16	6063	370/330.ccls.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 11:30 AM
L17	1192	uplink adj2 grant with (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) with PUSCH and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 11:30 AM
L18	835	uplink adj2 grant with (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) with PUSCH and OFDM\$1 and L15	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 11:31 AM
L19	750	uplink adj grant with (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) with PUSCH and OFDM\$1 and L15	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 11:31 AM
L20	750	(uplink adj grant with (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) with PUSCH and OFDM\$1) and L15	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 11:31 AM
L21	180	((("PARK") near3 ("Kyujin"))).INV.	(US-PGPUB; USPAT; USOCR)	OR	OFF	OFF	2020/05/29 11:32 AM
L22	254	((("CHOI") near3 ("Woo- jin"))).INV.	(US-PGPUB; USPAT; USOCR)	OR	OFF	OFF	2020/05/29 11:32 AM
L23	8	(uplink adj grant with (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) with PUSCH same OFDM\$1) and L15	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 11:32 AM
L24	16	(uplink adj grant with (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) with PUSCH same	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 11:32 AM

L25	86	OFDM\$1) ((uplink UL) adj grant with (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) with PUSCH same OFDM\$1)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 11:39 AM
L26	1624	((uplink UL\$3) adj grant) with (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) with PUSCH and OFDM\$1) and L15	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 11:58 AM
L27	372	((uplink UL\$3) adj grant) with resource with (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) with PUSCH and OFDM\$1) and L15	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 11:59 AM
L28	63	((uplink UL\$3) adj grant) with symbol near2 OFDM\$1 with PUSCH	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 02:40 PM
L29	1313	((uplink UL\$3) adj grant) same symbol near2 OFDM\$1 same PUSCH	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 05:18 PM
L30	439	((uplink UL\$3) adj grant) same symbol near2 OFDM\$1 same PUSCH same PDSCH	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 05:19 PM
L31	127	((uplink UL\$3) adj grant) with symbol near2 OFDM\$1 same PUSCH	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/29 05:19 PM
L32	329	index\$2 same PUSCH same OFDM adj symbol\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/30 09:06 AM
L33	53	index\$2 same PUSCH same OFDM adj symbol\$1 same (uplink UL) adj grant	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/30 09:08 AM
L34	154	index\$2 same PUSCH same symbol\$1 same (uplink UL) adj grant and OFDM	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/30 09:12 AM
L35	12	UE near2 (ID identifi\$6) same PUSCH same symbol\$1 same (uplink UL) adj grant and OFDM	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/05/30 09:17 AM
L36	15762	(uplink UL) adj grant	(US-PGPUB; USPAT;	OR	ON	ON	2020/10/22

		with (UEs)	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)				01:59 PM
L37	79	(uplink UL) adj grant with symbol\$1 with allocat\$3 with (UEs)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/10/22 02:01 PM
L38	24	(uplink UL) adj grant with symbol\$1 with allocat\$3 with (UEs) same pusch	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/10/22 02:02 PM
L39	2	"20200229187"	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/10/22 02:39 PM
L40	965	(uplink UL) adj grant with (index\$2 indic) with allocat\$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/11/03 12:38 PM
L41	261	(uplink UL) adj grant with (index\$2 indic) with allocat\$4 with pusch	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/11/03 12:39 PM
L44	225	(uplink UL) adj grant with (index\$2 indic) with table\$1 same pusch	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/11/04 12:19 PM
L45	273171	(H04W72/044 or H04L1/18 or H04L5/00 or H04L1/16 or H04W72/04 or H04L5/0007 or H04L5/0037 or H04W72/042 or H04L1/12 or H04L5/0053 or H04L5/0094 or H04L5/0044).cpc.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/11/04 03:29 PM
L46	6033	370/330.ccls.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/11/04 03:29 PM
L47	626	(uplink UL) adj grant with (index\$2 indic) with allocat\$4 and (L45 L46)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/11/04 03:29 PM
L48	197	((("PARK") near3 ("Kyujin"))).INV.	(US-PGPUB; USPAT; USOCR)	OR	OFF	OFF	2020/11/04 03:29 PM
L49	274	((("CHOI") near3 ("Woo-jin"))).INV.	(US-PGPUB; USPAT; USOCR)	OR	OFF	OFF	2020/11/04 03:29 PM
L50	378	(L48 L49)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/11/04 03:29 PM

L51	226	(uplink UL) adj grant with (index\$2 indic) with table\$1 same (pdsch pusch)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/11/04 03:30 PM
L52	187	RRC WITH resource near2 table SAME DCI WITH index\$2	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/09 12:11 PM
L53	229	RRC WITH resource near2 table SAME DCI WITH (row index\$2)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/09 12:14 PM
L54	2	"17170922"	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/09 02:05 PM
L57	187	RRC WITH resource near2 table SAME DCI WITH (indic\$2 index\$2)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/09 04:37 PM

L58	229	RRC WITH resource near2 table SAME DCI WITH (row\$1 indic\$2 index\$2)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/09 04:37 PM
L59	45	RRC WITH resource near2 table SAME DCI WITH (row\$1 indic\$2 index\$2)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/09 04:37 PM
L60	1595	RRC WITH resource SAME DCI WITH (row\$1 indic\$2 index\$2)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/09 04:38 PM
L61	314	RRC WITH resource SAME DCI near3 (row\$1 indic\$2 index\$2)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/09 04:38 PM
L62	175	RRC WITH table SAME DCI near3 (row\$1 indic\$2 index\$2)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/09 05:30 PM
L63	166	RRC WITH table SAME DCI near3 (row\$1 indic\$2 index\$2) AND (PDSCH PUSCH)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/09 05:31 PM
L64	3	"20140376422"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 09:01 AM
L65	6	("20140376422" "20140105191").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2022/08/10 09:02 AM

L66	72	("20140376422" "20140105191" "20190289605" "20150236828" "20150215906" "20150215905" "20150229451" "20150289235" "20150208392" "20150016369" "20150173064" "20160278055" "20150023265" "20160128037" "20150223208" "20170079018" "20170006589" "20170064678" "20150180625" "20150029966" "20150282126" "20170208569" "20170303252" "20170208572" "20170273061" "20170353282" "20170078066" "20170257855" "20180070337" "20170257853" "20170195098" "20180160409" "20180227893" "20120287848" "20140348057").pn.	CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 09:07 AM
L67	62	("20140376422" "20140105191" "20190289605" "20150236828" "20150215906" "20150215905" "20150229451" "20150289235" "20150208392" "20150016369"	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 09:07 AM

L68	329588	"20150173064" "20160278055" "20150023265" "20160128037" "20150223208" "20170079018" "20170006589" "20170064678" "20150180625" "20150029966" "20150282126" "20170208569" "20170303252" "20170208572" "20170273061" "20170353282" "20170078066" "20170257855" "20180070337" "20170257853" "20170195098" "20180160409" "20180227893" "20120287848" "20140348057").pn. (H04W72/044 OR H04L1/16 OR H04L1/18 OR H04L5/00 OR H04L5/0007 OR H04L5/0037 OR H04W72/04 OR H04W72/042 OR H04L1/12 OR H04L5/0044 OR H04L5/0091).cpc.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 09:09 AM
L69	5823	370/330.ccls.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 09:10 AM
L70	454	((("PARK") near3 ("Kyujin")) OR ("CHOI") near3 ("Woo-jin"))).INV.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2022/08/10 09:10 AM
L71	35	("20140376422" "20140105191" "20190289605" "20150236828" "20150215906" "20150215905" "20150229451" "20150289235" "20150208392" "20150016369" "20150173064" "20160278055" "20150023265" "20160128037" "20150223208"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/10 09:11 AM

L72	1045	"20170079018" "20170006589" "20170064678" "20150180625" "20150029966" "20150282126" "20170208569" "20170303252" "20170208572" "20170273061" "20170353282" "20170078066" "20170257855" "20180070337" "20170257853" "20170195098" "20180160409" "20180227893" "20120287848" "20140348057").pn. RRC WITH resource SAME DCI near3 (row\$1 indic\$2 index\$2)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:12 PM
L73	601	((radio ADJ resource ADJ control) RRC) WITH table SAME ((downlink ADJ control ADJ information) DCI) near3 (row\$1 indic\$2 index\$2)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:13 PM
L75	1615	((radio ADJ resource ADJ control) RRC) WITH (resource table) SAME ((downlink ADJ control ADJ information)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2022/08/10 12:13 PM

		DCI) near3 (row\$1 indic\$2 index\$2)	EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L76	1072	((radio ADJ resource ADJ control) RRC) WITH (resource table) SAME ((downlink ADJ control ADJ information) DCI) near3 (row\$1 indic\$2 index\$2) AND (L68 L69)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:14 PM
L77	307	((radio ADJ resource ADJ control) RRC) WITH (resource table) SAME ((downlink ADJ control ADJ information) DCI) near3 (row\$1 indic\$2 index\$2) AND (L68 L69)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:14 PM
L78	150	((radio ADJ resource ADJ control) RRC) WITH (resource table) SAME ((downlink ADJ control ADJ information) DCI) near3 (row\$1 indic\$2 index\$2) SAME (PDSCH PUSCH physical) AND (L68 L69)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:14 PM
L79	579	((radio ADJ resource ADJ control) RRC) WITH (resource table) SAME ((downlink ADJ control ADJ information) DCI) near3 (row\$1 indic\$2 index\$2) SAME (PDSCH PUSCH physical) AND (L68 L69)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2022/08/10 12:14 PM

L80	4	"16346108"	TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) (US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L81	3	"20190261337"	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L82	1645	uplink adj2 grant with slot	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L83	187	uplink adj2 grant with slot with allocat\$3 and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L84	492	uplink adj2 grant with slot with PUSCH and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L85	30	uplink adj2 grant with mini\$1slot same PUSCH and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L86	35	uplink adj2 grant with mini\$1slot\$1 same PUSCH and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L87	69	uplink adj2 grant same mini\$1slot\$1 same PUSCH and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L88	71	uplink adj2 grant same mini adj2 slot\$1 same PUSCH and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L89	71	uplink adj2 grant same mini adj2 (frame\$1 slot\$1) same PUSCH and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L90	1678	uplink adj2 grant same (frame\$1 slot\$1) same PUSCH and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L91	121	("7724697" "7839829" "7843877" "7848308" "7903818" "7912133" "7917137" "7936731" "8000273" "8000711" "8009606" "8018855"	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM

L92	56	"8032088" "8036110" "8046020" "8050202" "8059524" "8059632" "8059765" "8064382" "8072911" "8077670" "8078170" "7903818" "7912133" "7917137" "7936731" "8000273" "8000711" "8009606" "8018855" "8032088" "8036110" "8046020" "8050202" "8059524" "8059632" "8059765" "8064382" "8072911" "8077670" "8078170" "8107416" "8107883" "8121083" "8130812" "8131295" "8140083" "8145151" "8155063").pn. (US-20110088432-\$ US-20150060677-\$ US-0060677-\$ US- 0088432-\$ US- 1609919-\$ US- 16346108-\$ US- 20120287848-\$ US- 20140348057-\$ US- 20150016369-\$ US- 20150023265-\$ US- 20150029966-\$ US- 20150173064-\$ US- 20150180625-\$ US- 20150208392-\$ US- 20150215905-\$ US- 20150215906-\$ US- 20150223208-\$ US- 20150229451-\$ US- 20150236828-\$ US- 20150282126-\$ US- 20150289235-\$ US- 20160128037-\$ US- 20160278055-\$ US- 20170006589-\$ US- 20170064678-\$ US- 20170078066-\$ US- 20170079018-\$ US- 20170195098-\$ US- 20170208569-\$ US- 20170208572-\$ US- 20170257853-\$ US- 20170257855-\$ US- 20170273061-\$ US- 20170303252-\$ US- 20170353282-\$ US- 20180070337-\$ US- 20180160409-\$ US- 20180227893-\$).DID.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
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L93	3677	uplink adj2 grant same (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) same PUSCH and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L94	366569	(H04W72/044 or H04L1/18 or H04L5/00 or H04L1/16 or H04W72/04 or H04L5/0007 or H04L5/0037 or H04W72/042 or H04L1/12 or H04L5/0053 or H04L5/0094 or H04L5/0044).cpc.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L95	5823	370/330.ccls.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L96	1916	uplink adj2 grant with (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) with PUSCH and OFDM\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L97	1280	uplink adj2 grant with (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) with PUSCH and OFDM\$1 and L15	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L98	1093	uplink adj grant with (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) with PUSCH and OFDM\$1 and L15	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L99	1093	(uplink adj grant with (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) with PUSCH and OFDM\$1) and L15	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L100	247	((("PARK") near3 ("Kyujin"))).INV.	(US-PGPUB; USPAT; USOCR)	OR	OFF	OFF	2022/08/10 12:15 PM
L101	318	((("CHOI") near3 ("Woo-jin"))).INV.	(US-PGPUB; USPAT; USOCR)	OR	OFF	OFF	2022/08/10 12:15 PM
L102	35	(uplink adj grant with (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) with PUSCH same OFDM\$1) and L15	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L103	128	(uplink adj grant with (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) with PUSCH same OFDM\$1)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM

L104	297	((uplink UL) adj grant with (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) with PUSCH same OFDM\$1)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L105	2573	((uplink UL\$3) adj grant) with (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) with PUSCH and OFDM\$1) and L15	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L106	585	((uplink UL\$3) adj grant) with resource with (frame\$1 subframe\$1 sub\$1frame\$1 slot\$1) with PUSCH and OFDM\$1) and L15	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L107	270	((uplink UL\$3) adj grant) with symbol near2 OFDM\$1 with PUSCH	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L108	2367	((uplink UL\$3) adj grant) same symbol near2 OFDM\$1 same PUSCH	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L109	699	((uplink UL\$3) adj grant) same symbol near2 OFDM\$1 same PUSCH same PDSCH	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L110	354	((uplink UL\$3) adj grant) with symbol near2 OFDM\$1 same PUSCH	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L111	706	index\$2 same PUSCH same OFDM adj symbol\$1	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L112	98	index\$2 same PUSCH same OFDM adj symbol\$1 same (uplink UL) adj grant	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L113	531	index\$2 same PUSCH same symbol\$1 same (uplink UL) adj grant and OFDM	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L114	31	UE near2 (ID identifi\$6) same PUSCH same symbol\$1 same (uplink UL) adj grant and OFDM	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L115	22659	(uplink UL) adj grant with (UEs)	(US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	ON	ON	2022/08/10 12:15 PM

L116	144	(uplink UL) adj grant with symbol\$1 with allocat\$3 with (UEs)	JPO; DERWENT; IBM_TDB) (US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L117	66	(uplink UL) adj grant with symbol\$1 with allocat\$3 with (UEs) same pusch	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L118	2	"20200229187"	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L119	786	(uplink UL) adj grant with (index\$2 indic) with allocat\$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L120	331	(uplink UL) adj grant with (index\$2 indic) with allocat\$4 with pusch	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L121	290	(uplink UL) adj grant with (index\$2 indic) with table\$1 same pusch	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L122	366569	(H04W72/044 or H04L1/18 or H04L5/00 or H04L1/16 or H04W72/04 or H04L5/0007 or H04L5/0037 or H04W72/042 or H04L1/12 or H04L5/0053 or H04L5/0094 or H04L5/0044).cpc.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L123	5823	370/330.ccls.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L124	549	(uplink UL) adj grant with (index\$2 indic) with allocat\$4 and (L45 L46)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L125	247	((("PARK") near3 ("Kyujin"))).INV.	(US-PGPUB; USPAT; USOCR)	OR	OFF	OFF	2022/08/10 12:15 PM
L126	318	((("CHOI") near3 ("Woo-jin"))).INV.	(US-PGPUB; USPAT; USOCR)	OR	OFF	OFF	2022/08/10 12:15 PM
L127	924	(L48 L49)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L128	294	(uplink UL) adj grant	(US-PGPUB; USPAT;	OR	ON	ON	2022/08/10

L129	187	with (index\$2 indic) with table\$1 same (pdsch pusch) RRC WITH resource near2 table SAME DCI WITH index\$2	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB) (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	12:15 PM 2022/08/10 12:15 PM
L130	229	RRC WITH resource near2 table SAME DCI WITH (row index\$2)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L131	2	"17170922"	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L132	187	RRC WITH resource near2 table SAME DCI WITH (indic\$2 index\$2)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L133	229	RRC WITH resource	(US-PGPUB; USPAT;	OR	ON	ON	2022/08/10

		near2 table SAME DCI WITH (row\$1 indic\$2 index\$2)	USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				12:15 PM
L134	45	RRC WITH resource near2 table SAME DCI WITH (row\$1 indic\$2 index\$2)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L135	1595	RRC WITH resource SAME DCI WITH (row\$1 indic\$2 index\$2)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L136	314	RRC WITH resource SAME DCI near3 (row\$1 indic\$2 index\$2)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L137	175	RRC WITH table SAME DCI near3 (row\$1 indic\$2 index\$2)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L138	166	RRC WITH table SAME DCI near3 (row\$1 indic\$2 index\$2) AND (PDSCH PUSCH)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L139	3	"20140376422"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L140	6	("20140376422" "20140105191").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2022/08/10 12:15 PM

L141	72	("20140376422" "20140105191" "20190289605" "20150236828" "20150215906" "20150215905" "20150229451" "20150289235" "20150208392" "20150016369" "20150173064" "20160278055" "20150023265" "20160128037" "20150223208" "20170079018" "20170006589" "20170064678" "20150180625" "20150029966" "20150282126" "20170208569" "20170303252" "20170208572" "20170273061" "20170353282" "20170078066" "20170257855" "20180070337" "20170257853" "20170195098" "20180160409" "20180227893" "20120287848" "20140348057").pn.	EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L142	62	("20140376422" "20140105191" "20190289605" "20150236828" "20150215906" "20150215905" "20150229451" "20150289235" "20150208392" "20150016369" "20150173064"	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM

L143	329588	"20160278055" "20150023265" "20160128037" "20150223208" "20170079018" "20170006589" "20170064678" "20150180625" "20150029966" "20150282126" "20170208569" "20170303252" "20170208572" "20170273061" "20170353282" "20170078066" "20170257855" "20180070337" "20170257853" "20170195098" "20180160409" "20180227893" "20120287848" "20140348057").pn. (H04W72/044 OR H04L1/16 OR H04L1/18 OR H04L5/00 OR H04L5/0007 OR H04L5/0037 OR H04W72/04 OR H04W72/042 OR H04L1/12 OR H04L5/0044 OR H04L5/0091).cpc.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L144	5823	370/330.ccls.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L145	454	((("PARK") near3 ("Kyujin")) OR (("CHOI") near3 ("Woo-jin"))).INV.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2022/08/10 12:15 PM
L146	35	("20140376422" "20140105191" "20190289605" "20150236828" "20150215906" "20150215905" "20150229451" "20150289235" "20150208392" "20150016369" "20150173064" "20160278055" "20150023265" "20160128037" "20150223208" "20170079018"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2022/08/10 12:15 PM

L147	1045	"20170006589" "20170064678" "20150180625" "20150029966" "20150282126" "20170208569" "20170303252" "20170208572" "20170273061" "20170353282" "20170078066" "20170257855" "20180070337" "20170257853" "20170195098" "20180160409" "20180227893" "20120287848" "20140348057").pn. RRC WITH resource SAME DCI near3 (row\$1 indic\$2 index\$2)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L148	601	((radio ADJ resource ADJ control) RRC) WITH table SAME ((downlink ADJ control ADJ information) DCI) near3 (row\$1 indic\$2 index\$2)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L149	1615	((radio ADJ resource ADJ control) RRC) WITH (resource table) SAME ((downlink ADJ control ADJ information) DCI) near3 (row\$1	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB,	OR	ON	ON	2022/08/10 12:15 PM

L150	1072	indic\$2 index\$2) ((radio ADJ resource ADJ control) RRC) WITH (resource table) SAME ((downlink ADJ control ADJ information) DCI) near3 (row\$1 indic\$2 index\$2) AND (L68 L69)	HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L151	307	((radio ADJ resource ADJ control) RRC) WITH (resource table) SAME ((downlink ADJ control ADJ information) DCI) near3 (row\$1 indic\$2 index\$2) AND (L68 L69)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L152	150	((radio ADJ resource ADJ control) RRC) WITH (resource table) SAME ((downlink ADJ control ADJ information) DCI) near3 (row\$1 indic\$2 index\$2) SAME (PDSCH PUSCH physical) AND (L68 L69)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/08/10 12:15 PM
L153	579	((radio ADJ resource ADJ control) RRC) WITH (resource table) SAME ((downlink ADJ control ADJ information) DCI) near3 (row\$1 indic\$2 index\$2) SAME (PDSCH PUSCH physical) AND (L68 L69)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2022/08/10 12:15 PM

			TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
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PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N52	27	((index\$2 indic) with table\$1 same (pdsch pusch)).clm.	(USPAT)	OR	ON	ON	2020/11/04 03:30 PM
N53	38	((index\$2 indic) same table\$1 same (pdsch pusch)).clm.	(USPAT)	OR	ON	ON	2020/11/04 03:33 PM
N54	51	((index\$2 indic) with table\$1 same (pdsch pusch)).clm.	(USPAT)	OR	ON	ON	2022/08/10 12:15 PM
N55	60	((index\$2 indic) same table\$1 same (pdsch pusch)).clm.	(USPAT)	OR	ON	ON	2022/08/10 12:15 PM

Generalized dual-mode **index** modulation aided **OFDM**

T Mao, Q Wang, Z Wang - IEEE Communications Letters, 2016 - [ieeexplore.ieee.org](#)

... detection, the information bits transmit- ted by the constellations and the **index** pattern can be readily demodulated using a look-up **table** that maps the realizations of **OFDM** subblocks to ...

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Multiple-input multiple-output **OFDM** with **index** modulation

E Başar - IEEE Signal Processing Letters, 2015 - [ieeexplore.ieee.org](#)

... 4, $K = 2$ and $N = 4$, $K = 3$ are given in **Tables I** and **II** ... to the reference look-up **table** of size $C = 2p_1 = 4$. The **OFDM index** modulators in each branch of the transmitter obtain the **OFDM-IM** ...

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OFDM with **index** modulation using coordinate interleaving

E Başar - IEEE Wireless Communications Letters, 2015 - [ieeexplore.ieee.org](#)

... numbers to K -combinations [1]. In **Table I**, an **index** selection example is provided for the look-up **table** method ... For the CI-**OFDM-IM** scheme, rotated square M -ary quadrature ...

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Dual-mode **index** modulation aided **OFDM**

T Mao, Z Wang, Q Wang, S Chen, L Hanzo - IEEE Access, 2016 - [ieeexplore.ieee.org](#)

... Aided **OFDM** FIGURE 1. System model of the DM-**OFDM** transmitter. **TABLE 1. A Look-Up Table of Index Modulation** For $g_1 = 2$, $l = 4$, and $k = 2$. with ...

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Index modulated **OFDM** spread spectrum

Q Li, M Wen, E Başar, F Chen - IEEE Transactions on wireless ... , 2018 - [ieeexplore.ieee.org](#)

... 17, NO. 4, APRIL 2018 **Index** Modulated **OFDM** Spread Spectrum ... **Index** Terms—**OFDM**, **index** modulation, spread spectrum, channel estimation errors, multi-user communications ...

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OFDM with interleaved subcarrier-**index** modulation

Y Xiao, S Wang, L Dan, X Lei, P Yang... - IEEE Communications ... , 2014 - [ieeexplore.ieee.org](#)

... XIAO et al.: **OFDM** WITH INTERLEAVED SUBCARRIER-**INDEX** MODULATION ... of **OFDM-ISIM**, **OFDM-IM** and **OFDM** (16QAM modulation ... **Table I**. According to the above theoretical and ...

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On multiple-input multiple-output **OFDM** with **index** modulation for next generation wireless networks

E Başar - IEEE Transactions on Signal Processing, 2016 - [ieeexplore.ieee.org](#)

... Active subcarrier **index** selection is performed at **OFDM index** modulators of the ... by either using reference look-up **tables** for smaller values of ... K and N . An example look-up **table** of size ...

☆ Save  Cite Cited by 188 Related articles All 8 versions

Dual-mode **index** modulation aided **OFDM** with constellation power allocation and low-complexity detector design

X Zhang, H Bie, Q Ye, C Lei, X Tang - IEEE access, 2017 - [ieeexplore.ieee.org](#)

... According to (1) and (2), the SE of the proposed DM-**OFDM-CPA** can be given by **TABLE I MAPPING TABLE OF INDEX SELECTOR WHEN $n=4$, $k=2$...**

☆ Save  Cite Cited by 42 Related articles All 2 versions 

Optical OFDM with index modulation for visible light communicationsE Başar, E Panayirci - 2015 4th International Workshop on ..., 2015 - [ieeexplore.ieee.org](#)

... the indices of the active subcarriers of the **OFDM** block, the use of a look-up **table** becomes infeasible ... A combinatorial method based **index** selection procedure can be performed for ...

☆ Save  Cite Cited by 39 Related articles All 5 versions **Diversity enhancing multiple-mode OFDM with index modulation**Q Li, M Wen, E Başar, HV Poor... - IEEE Transactions on ..., 2018 - [ieeexplore.ieee.org](#)

... method used for **MM-OFDM-IM**, the p l bits are separated into p l 1 = $\lfloor \log_2(nl) \rfloor$ **index** bits and p l 2 = $n \log_2(M)$ symbol bits. According to p l 1 bits and a look-up **table** or permutation ...

☆ Save  Cite Cited by 46 Related articles All 5 versions**Related searches****ofdm with index modulation****index modulation power allocation in ofdm****mimo ofdm system coded index modulation**



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/170,922	02/09/2021	Kyujin PARK	KT21-0101C1

CONFIRMATION NO. 1018

IMPROPER CFR REQUEST



OC000000132079038

126667
INVENSTONE PATENT, LLC
14291-A Brushwood way
Centreville, VA 20121

Date Mailed: 02/28/2022

RESPONSE TO REQUEST FOR CORRECTED FILING RECEIPT

Continuity, Priority Claims, Petitions, and Non-Publication Requests

In response to your request for a corrected Filing Receipt, the Office is unable to comply with your request because:

- The priority or continuity claim has not been entered because it was not filed during the required time period. Applicant may wish to consider filing a petition to accept an unintentionally delayed claim for priority. See 37 CFR 1.55 or 1.78.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/sstephanos/

CORRECTED ADS FORM

Application Number	17170922
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK

Inventor Information

****If no data is shown, no data has been corrected****

	Data of Record	Updated Data
Order Number		
Name		

Residence Information

Residency		
City		
State		
Country of Residence		

Mailing Address of Inventor

Address 1		
Address 2		
City,State/Province, Postal Code		
Country		

Application Information

	Data of Record	Updated Data
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK	
Attorney Docket Number	KT21-0101C1	
Entity Type	Regular Undiscounted	

Domestic Benefit/National Stage Information

****If no data is shown, no data has been corrected****

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121,365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S. C. 119(e) or 120, and 37 CFR 1.78(a).

		Data of Record	Updated Data
	Prior Application Status	patented	
	Application Number	17170922	
	Continuity Type	CON	
	Prior Application Number	16346108	
	Filing Date (YYYY-MM-DD)	2019-04-29	
	Patent Number	10952206	
	Issue Date (YYYY-MM-DD)	2021-03-16	

		Data of Record	Updated Data
	Prior Application Status		<u>expired</u>
	Application Number		<u>16346108</u>
	Continuity Type		<u>NST</u>
	Prior Application Number		<u>PCT/KR2017/012105</u>
	Filing Date (YYYY-MM-DD)		<u>2017-10-30</u>
	Patent Number		
	Issue Date (YYYY-MM-DD)		

Foreign Priority Information

****If no data is shown, no data has been corrected****

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

		Data of Record	Updated Data
	Application Number		<u>10-2016-0143013</u>
	Country		<u>KR</u>
	Filing Date		<u>2016-10-31</u>
	Access Code		<u>C34B</u>
		Data of Record	Updated Data
	Application Number		<u>10-2017-0140898</u>
	Country		<u>KR</u>
	Filing Date		<u>2017-10-27</u>
	Access Code		<u>8040</u>

Corrected ADS 1.0

Applicant Information

****If no data is shown, no data has been corrected****

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

	Data of Record	Updated Data
Applicant Type	ASG	
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is		
Name of the Deceased or Legally Incapacitated Inventor		
Applicant is an Organization	Yes	
Name		
Organization Name	KT CORPORATION	
Address 1		206, Jeongja-dong 90, Buljeong-ro, Bundang-gu
Address 2		Seongnam-si
City,State/Province,Postal Code	Gyeonggi-do	Gyeonggi-do 13606
Country	KR	
Phone Number		
Fax Number		
Email Address		

Assignee Information including Non-Applicant Assignee Information

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Corrected ADS 1.0		

Order		
Applicant is an Organization		
Name		
Organization Name		

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Signature

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b).

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Daniel CHUNG/	Registration Number	57889
First Name	Daniel	Last Name	CHUNG

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	17/170,922
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2

☐	Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
--------------------------	---

Inventor Information:

Inventor 1					Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Kyujin		PARK		
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service					
City	Seoul	Country of Residence ⁱ	KR		
Mailing Address of Inventor:					
Address 1	Korea Telecom Research Center, Umyeon-dong 151				
Address 2	Taebong-ro, Seocho-gu				
City	Seoul	State/Province			
Postal Code	06763	Country ⁱ	KR		
Inventor 2					Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Woo-jin		CHOI		
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service					
City	Seoul	Country of Residence ⁱ	KR		
Mailing Address of Inventor:					
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Address 2	Taebong-ro, Seocho-gu				
City	Seoul	State/Province			
Postal Code	06763	Country ⁱ	KR		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.					Add

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	17/170,922
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence information of this application.**

Customer Number	126667		
Email Address	mail@invenstonepat.com	Add Email	Remove Email

Application Information:

Title of the Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		
Attorney Docket Number	KT21-0101C1	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	10	Suggested Figure for Publication (if any)	

Filing By Reference :

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	17/170,922
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the application number blank.

Prior Application Status		Patented		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
17170922	Continuation of	16346108	2019-04-29	10952206	2021-03-16
Prior Application Status		Expired		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)		
16346108	a 371 of international	PCT/KR2017/012105	2017-10-30		

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

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Remove			
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)
10-2017-0140898	KR	2017-10-27	8040
Remove			
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)
10-2016-0143013	KR	2016-10-31	C34B

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	17/170,922
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013. NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.
--

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application. In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application. In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.
--

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.
--

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	KT21-0101C1
	Application Number	17/170,922
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK	

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

- ☒ Assignee ☐ Legal Representative under 35 U.S.C. 117 ☐ Joint Inventor
- ☐ Person to whom the inventor is obligated to assign. ☐ Person who shows sufficient proprietary interest

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Applicant is an Organization check here. ☒

Organization Name KT CORPORATION

Mailing Address Information For Applicant:

Address 1	206, Jeongja-dong 90, Buljeong-ro, Bundang-gu		
Address 2	Seongnam-si		
City	Gyeonggi-do	State/Province	
Country	KR	Postal Code	13606
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1	
		Application Number	17/170,922	
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK			
Organization Name	KT CORPORATION			
Mailing Address Information For Assignee including Non-Applicant Assignee:				
Address 1		206, Jeongja-dong 90, Buljeong-ro, Bundang-gu		
Address 2		Seongnam-si		
City		Gyeonggi-do	State/Province	
Country ⁱ	KR	Postal Code	13606	
Phone Number			Fax Number	
Email Address				
Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.				

Signature:

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications.				
Signature	/Daniel CHUNG/		Date (YYYY-MM-DD)	2022-02-04
First Name	Daniel	Last Name	CHUNG	Registration Number
57889				
Additional Signature may be generated within this form by selecting the Add button.				

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt	
EFS ID:	44915354
Application Number:	17170922
International Application Number:	
Confirmation Number:	1018
Title of Invention:	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK
First Named Inventor/Applicant Name:	Kyujin PARK
Customer Number:	126667
Filer:	Daniel Chung
Filer Authorized By:	
Attorney Docket Number:	KT21-0101C1
Receipt Date:	04-FEB-2022
Filing Date:	09-FEB-2021
Time Stamp:	01:51:25
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment		no			
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet to update/ correct info	CorrectedADS.pdf	117424	no	5
			33433c950d7999e9b47d88845f2afd3d0922dac5		
Warnings:					

Information:					
2	Application Data Sheet to update/ correct info	KT21-0101C1_corrected_ADS. pdf	478588 613460a546633564013f610cfd65f187b41e85e	no	7
Warnings:					
Information:					
Total Files Size (in bytes):			596012		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

INVENSTONE PATENT, LLC
14291-A Brushwood Way
Centreville VA 20121

MAILED
OCT 29 2021

INTERNATIONAL PATENT LEGAL ADM

In re Application of	:	
KT CORPORATION	:	DECISION ON PETITION
Application No.: 17/170,922	:	UNDER 37 CFR 1.78
Filing Date: February 9, 2021	:	AND 1.55
Attorney Docket No.: KT21-0101C1	:	

This is a decision on the petition under 37 CFR 1.78(e), filed September 14, 2021, to accept an unintentionally delayed claim under 35 U.S.C. 120 for the benefit of priority to one or more prior-filed nonprovisional or international applications. This is also a decision on the concurrently filed constructive petition under 37 CFR 1.55 to accept an unintentionally delayed claim under 35 U.S.C. 119(a) through (d) or (f) and/or 35 U.S.C. 365(a) or (b) for priority to one or more prior foreign applications.

I. Petition under 37 CFR 1.78(e)

Under 37 CFR 1.78(e), a petition to accept an unintentionally delayed claim under 35 U.S.C. 120 for the benefit of a prior-filed application must be accompanied by:

- (i) the reference required by 35 U.S.C. 120 and 37 CFR 1.78(d)(2) to the prior-filed application, unless previously submitted;
- (ii) the petition fee set forth in 37 CFR 1.17(m); and
- (iii) a statement that the entire delay between the date the claim was due under 37 CFR 1.78(d)(3) and the date the claim was filed was unintentional. The Director may require additional information where there is a question whether the delay was unintentional.

With regard to item (i), a proper reference to the prior-filed application(s) has been included in an application data sheet as required by 37 CFR 1.78(d)(2).

With regard to item (ii), the petition fee set forth in 37 CFR 1.17(m) has been submitted.

With regard to item (iii), the petition includes a statement of unintentional delay. However, no petition is required to add a reference to the international application number by which a national

stage (35 U.S.C. 371) application was identified during the international stage. Accordingly, the petition under 37 CFR 1.78(e) is moot.

II. Petition under 37 CFR 1.55(e)

Under 37 CFR 1.55(e), a petition to accept an unintentionally delayed claim under 35 U.S.C. 119(a) through (d) or (f) and/or 35 U.S.C. 365(a) or (b) for the benefit of a prior-filed foreign application must be accompanied by:

- (i) the claim required by 35 U.S.C. 119 and 37 CFR 1.55(e)(1) to the prior-filed application, unless previously submitted;
- (ii) a certified copy of the foreign application, if required by 37 CFR 1.55(f), unless previously submitted or an exception under 37 CFR 1.55(h), (i), or (j) applies;
- (iii) the petition fee set forth in 37 CFR 1.17(m); and
- (iv) a statement that the entire delay between the date the priority claim was due under 37 CFR 1.55(d) and the date the claim was filed was unintentional. The Director may require additional information where there is a question whether the delay was unintentional.

With regard to item (i), the claim for foreign priority has been presented in an application data sheet as required by 37 CFR 1.55(e)(1).

With regard to item (ii), the certified copy requirement has not been satisfied. If the certified copy has been filed in a parent or related application, it is not necessary to file an additional certified copy in the later application. See 37 CFR 1.55(h). Applicant may simply identify the application containing the certified copy. See MPEP 215, Section III.

With regard to item (iii), the petition fee set forth in 37 CFR 1.17(m) has been submitted.

With regard to item (iv), the statement contained in the petition fails to specifically state that the entire delay between the date the priority claim was due under 37 CFR 1.55(d) and the date the claim was filed was unintentional. Instead, the statement of unintentional delay specifically refers to a different regulation, 37 CFR 1.78(a)(4).

III. Conclusion

For the reasons in §I above, the petition under 37 CFR 1.78(e) is **DISMISSED AS MOOT**.

For the reasons in §II above, the petition under 37 CFR 1.55(e) is **DISMISSED** without prejudice.

Any further correspondence with respect to this matter may be filed electronically via EFS-Web selecting the document description "Petition for review and processing by the PCT Legal Office" or by mail addressed to Mail Stop PCT, Commissioner for Patents, International Patent Legal Administration, P.O. Box 1450, Alexandria, Virginia 22313-1450, with the contents of the letter marked to the attention of the International Patent Legal Administration.

/George Dombroske/
George Dombroske
Legal Examiner
International Patent Legal Administration
571-272-3283

CORRECTED ADS FORM

Application Number	17170922
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK

Inventor Information

****If no data is shown, no data has been corrected****

	Data of Record	Updated Data
Order Number		
Name		

Residence Information

Residency		
City		
State		
Country of Residence		

Mailing Address of Inventor

Address 1		
Address 2		
City,State/Province, Postal Code		
Country		

Application Information

	Data of Record	Updated Data
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK	
Attorney Docket Number	KT21-0101C1	
Entity Type	Regular Undiscounted	

Domestic Benefit/National Stage Information

****If no data is shown, no data has been corrected****

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121,365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S. C. 119(e) or 120, and 37 CFR 1.78(a).

		Data of Record	Updated Data
	Prior Application Status	patented	
	Application Number	17170922	
	Continuity Type	CON	
	Prior Application Number	16346108	
	Filing Date (YYYY-MM-DD)	2019-04-29	
	Patent Number	10952206	
	Issue Date (YYYY-MM-DD)	2021-03-16	

		Data of Record	Updated Data
	Prior Application Status		<u>expired</u>
	Application Number		<u>16346108</u>
	Continuity Type		<u>NST</u>
	Prior Application Number		<u>PCT/KR2017/012105</u>
	Filing Date (YYYY-MM-DD)		<u>2017-10-30</u>
	Patent Number		
	Issue Date (YYYY-MM-DD)		

Foreign Priority Information

****If no data is shown, no data has been corrected****

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

		Data of Record	Updated Data
	Application Number		<u>10-2017-0140898</u>
	Country		<u>KR</u>
	Filing Date		<u>2017-10-27</u>
	Access Code		<u>8040</u>
		Data of Record	Updated Data
	Application Number		<u>10-2016-0143013</u>
	Country		<u>KR</u>
	Filing Date		<u>2016-10-31</u>
	Access Code		<u>C34B</u>

Corrected ADS 1.0

Applicant Information

****If no data is shown, no data has been corrected****

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

	Data of Record	Updated Data
Applicant Type		
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is		
Name of the Deceased or Legally Incapacitated Inventor		
Applicant is an Organization		
Name		
Organization Name		
Address 1		
Address 2		
City,State/Province,Postal Code		
Country		
Phone Number		
Fax Number		
Email Address		

Assignee Information including Non-Applicant Assignee Information

****If no data is shown, no data has been corrected****

Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of Title 37 of the CFR to have an assignment recorded in the Office

	Data of Record	Updated Data

Corrected ADS 1.0

Order		
Applicant is an Organization		
Name		
Organization Name		

Mailing Address

Address 1		
Address 2		
City,State/Province,Postal Code		
Country		
Phone Number		
Fax Number		
Email Address		

Signature

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b).

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Daniel CHUNG/	Registration Number	57889
First Name	Daniel	Last Name	CHUNG

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2

☐	Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
--------------------------	---

Inventor Information:

Inventor 1					Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Kyujin		PARK		
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service					
City	Seoul	Country of Residence¹	KR		
Mailing Address of Inventor:					
Address 1	Korea Telecom Research Center, Umyeon-dong 151				
Address 2	Taebong-ro, Seocho-gu				
City	Seoul	State/Province			
Postal Code	06763	Country¹	KR		
Inventor 2					Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Woo-jin		CHOI		
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service					
City	Seoul	Country of Residence¹	KR		
Mailing Address of Inventor:					
Address 1	Korea Telecom Research Center, Umyeon-dong 151				
Address 2	Taebong-ro, Seocho-gu				
City	Seoul	State/Province			
Postal Code	06763	Country¹	KR		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.					Add

Correspondence Information:

EFS Web 2.2.12

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		
Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).			
☐ An Address is being provided for the correspondence information of this application.			
Customer Number	126667		
Email Address	mail@invenstonepat.com	Add Email	Remove Email

Application Information:

Title of the Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		
Attorney Docket Number	KT21-0101C1	Small Entity Status Claimed ☐	
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	10	Suggested Figure for Publication (if any)	
Filing By Reference :			
Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").			
For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).			
Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country	

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐ Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.			
Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	126667		

EFS Web 2.2.12

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the application number blank.

Prior Application Status		Patented		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
17170922	Continuation of	16346108	2019-04-29	10952206	2021-03-16
Prior Application Status		Expired		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)		
16346108	a 371 of international	PCT/KR2017/012105	2017-10-30		
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.					

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)ⁱ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove			
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ^j (if applicable)
10-2017-0140898	KR	2017-10-27	8040
Remove			
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ^j (if applicable)
10-2016-0143013	KR	2016-10-31	C348
Additional Foreign Priority Data may be generated within this form by selecting the Add button.			

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013. NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices
If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application. In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application. In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	KT21-0101C1
	Application Number	
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK	

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

- ☒ Assignee ☐ Legal Representative under 35 U.S.C. 117 ☐ Joint Inventor
- ☐ Person to whom the inventor is obligated to assign. ☐ Person who shows sufficient proprietary interest

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Applicant is an Organization check here. ☒

Organization Name KT CORPORATION

Mailing Address Information For Applicant:

Address 1	206, Jeongja-dong 90, Buljeong-ro, Bundang-gu		
Address 2	Seongnam-si		
City	Gyeonggi-do	State/Province	
Country	KR	Postal Code	13606
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1	
		Application Number		
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK			
Organization Name	KT CORPORATION			
Mailing Address Information For Assignee including Non-Applicant Assignee:				
Address 1	206, Jeongja-dong 90, Buljeong-ro, Bundang-gu			
Address 2	Seongnam-si			
City	Gyeonggi-do	State/Province		
Country ⁱ	KR	Postal Code	13606	
Phone Number		Fax Number		
Email Address				
Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.				

Signature:

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications.				
Signature	/Daniel CHUNG/		Date (YYYY-MM-DD)	2021-09-14
First Name	Daniel	Last Name	CHUNG	Registration Number
57889				
Additional Signature may be generated within this form by selecting the Add button.				

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 216(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal				
Application Number:		17170922		
Filing Date:		09-Feb-2021		
Title of Invention:		METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		
First Named Inventor/Applicant Name:		Kyujin PARK		
Filer:		Daniel Chung		
Attorney Docket Number:		KT21-0101C1		
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
PET. DELAY SUB OR RESTORE PRIORITY-CLAIM	1454	1	2100	2100
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				2100

Electronic Acknowledgement Receipt	
EFS ID:	43766546
Application Number:	17170922
International Application Number:	
Confirmation Number:	1018
Title of Invention:	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK
First Named Inventor/Applicant Name:	Kyujin PARK
Customer Number:	126667
Filer:	Daniel Chung
Filer Authorized By:	
Attorney Docket Number:	KT21-0101C1
Receipt Date:	14-SEP-2021
Filing Date:	09-FEB-2021
Time Stamp:	21:40:48
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$2100
RAM confirmation Number	E20219DL40452467
Deposit Account	602040
Authorized User	Daniel CHUNG
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.21 (Miscellaneous fees and charges) 37 CFR 1.20 (Post Issuance fees)	

37 CFR 1.19 (Document supply fees)					
37 CFR 1.17 (Patent application and reexamination processing fees)					
37 CFR 1.16 (National application filing, search, and examination fees)					
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet to update/ correct info	CorrectedADS.pdf	116631	no	5
			6e94433824223b104a93296a9d5a804ed074c393		
Warnings:					
Information:					
2	Petition for review by the Office of Petitions	210914-KT21-0101C1_sb0445.pdf	188977	no	5
			e3bc4db59bf9b6374711558bbf108a0cc7268678		
Warnings:					
Information:					
3	Application Data Sheet to update/ correct info	210914-KT21-0101C1_corrected_ADS.pdf	103579	no	7
			09fe2d0bea532a01b758c5a2c38930117954ed4d		
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	37901	no	2
			b1ddf71fab244665f3a33a01d6d3334a07f17839		
Warnings:					
Information:					
Total Files Size (in bytes):			447088		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: PET.OP

Document Description: Petition for Review by the Office of Petitions

PTO/SB/445 (05-18)

Approved for use through 11/30/2020. OMB 0651-0032

U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**PETITION TO ACCEPT AN UNINTENTIONALLY DELAYED CLAIM UNDER 35 U.S.C. 119(e)
FOR THE BENEFIT OF A PRIOR-FILED PROVISIONAL APPLICATION (37 CFR 1.78(c))**

Page 1 of 4

First named inventor: Kyujin PARK

Application No.: 17/170,922

Art Unit: Not assigned yet

Filed: February 9, 2021

Examiner: Not assigned yet

Title: **METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR
NEXT-GENERATION WIRELESS ACCESS NETWORK**

Attention: Office of Petitions

Mail Stop Petition

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

FAX (571) 273-8300

NOTE: If information or assistance is needed in completing this form, please contact the Office of Petitions at (571) 272-3282.

APPLICANT HEREBY PETITIONS FOR ACCEPTANCE OF AN UNINTENTIONALLY DELAYED BENEFIT CLAIM UNDER 37 CFR 1.78(c).

NOTE: A grantable petition requires the following items:

- (1) the reference required by 35 U.S.C. 119(e) and 37 CFR 1.78(a)(3) to the prior-filed provisional application, unless previously submitted;
- (2) the petition fee set forth in 37 CFR 1.17(m); and
- (3) a statement that the entire delay between the date the benefit claim was due under 37 CFR 1.78(a)(4) and the date the benefit claim was filed was unintentional. The Director may require additional information where there is a question as to whether the delay was unintentional.

1. The reference required by 35 U.S.C. 119(e) and 37 CFR 1.78(a)(3) to the prior-filed provisional application

- ☒ The application was filed on or after September 16, 2012, and the reference is either set forth in the attached corrected ADS, or in a corrected ADS that was previously submitted.
- ☐ The application was filed prior to September 16, 2012, and the reference is either (1) set forth in a supplemental ADS, or (2) set forth in the attached amendment to the first sentence(s) of the specification, or (3) a supplemental ADS or amendment to the first sentence(s) of the specification was previously submitted. See 37 CFR 1.78(h).

Reminders:

- Any ADS which corrects or updates the information of record must comply with 37 CFR 1.76(c)(2) (or for applications filed prior to September 16, 2012, pre-AIA 37 CFR 1.76(c))
- The nonprovisional application must have been filed within 1 year of the filing date of the prior-filed provisional application except as provided in 37 CFR 1.78(b). See 37 CFR 1.78(a).

2. Petition fee

- ☐ Small entity fee \$ _____ (37 CFR 1.17(m)). Applicant asserts small entity status. See 37 CFR 1.27.
- ☐ Micro entity fee \$ _____ (37 CFR 1.17(m)). Applicant has established or is establishing micro entity status. See 37 CFR 1.29. Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.
- ☒ Undiscounted fee \$ 2100 (37 CFR 1.17(m)).

This collection of information is required by 37 CFR 1.78(c). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 1 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Doc Code: PET.OP

Document Description: Petition for Review by the Office of Petitions

PTO/SB/445 (12-17)

Approved for use through 11/30/2020. OMB 0651-0032

U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**PETITION TO ACCEPT AN UNINTENTIONALLY DELAYED CLAIM UNDER 35 U.S.C. 119(e)
FOR THE BENEFIT OF A PRIOR-FILED PROVISIONAL APPLICATION (37 CFR 1.78(c))**

Page 2 of 4

3. STATEMENT: The entire delay between the date the benefit claim was due under 37 CFR 1.78(a)(4) and the date the benefit claim was filed was unintentional.

NOTE: The Director may require additional information where there is a question whether the delay was unintentional.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

/Daniel CHUNG/

Signature*

Daniel CHUNG

Typed or Printed Name

14291-A Brushwood Way Centreville, VA 20121

Address

Address

September 14, 2021

Date

57889

Registration Number, if applicable

703-879-5205

Telephone Number

* This petition must be signed in accordance with 37 CFR 1.33. Please see 37 CFR 1.4(d) for the signature requirements. Submit multiple forms if more than one signature is required.

Enclosures:

☒ Application Data Sheet (see Instructions starting on page 3)

☒ Fee

☐ Other: _____

CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]

I hereby certify that this correspondence is being:

☐ Deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop Petition, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450.

☐ Transmitted by EFS-Web or by fax on the date shown below to the United States Patent and Trademark Office at (571) 273-8300.

Date

Signature

Typed or printed name of person signing certificate

**Instructions for Petition to Accept an Unintentionally Delayed Claim under 35 U.S.C. 119(e)
for the Benefit of a Prior-Filed Provisional Application (37 CFR 1.78(c))**

(Not to be Submitted to the USPTO)

Note: This form is for unintentionally delayed benefit claims to provisional application(s) only

1. The reference required by 35 U.S.C. 119(e) and 37 CFR 1.78(a)(3) to the provisional application

a. For applications filed on or after September 16, 2012, the reference must be set forth in a corrected ADS.

Note: Any ADS filed after the filing of the application is considered a corrected (or updated) ADS even if an ADS was not previously submitted. A corrected ADS must identify the information that is being changed with underlining for insertions and strike-through or brackets for text removed. In general, the identification of the information being changed should be made relative to the most recent filing receipt. For example, where the most recent filing receipt for the application shows no benefit claim, the entire benefit claim must be shown with underlining in the corrected ADS. In addition, if the ADS identified an incorrect provisional application number and the most recent filing receipt included the incorrect provisional application number, the corrected ADS should identify the incorrect provisional application number being deleted with strike-through or brackets, and should identify the correct provisional application number being added with underlining. For more information regarding a corrected ADS in an application filed on or after September 16, 2012, see MPEP 601.05(a), subsection II.

A corrected ADS may include all of the section headings listed in 37 CFR 1.76(b) with all appropriate data for each heading or only those sections (including the section headings) containing changed or updated information. See 37 CFR 1.76(c)(2). A corrected ADS must identify the application by application number and be properly signed.

Use of the corrected Web-based ADS is recommended for registered users of EFS-Web because it will pre-populate with information of record, applicants can then type in the desired changes, and the system will create a PDF version with the appropriate strike-through and underlining. For more information, see the "Quick Start Guide for Corrected Web-based Application Data Sheet (Corrected Web ADS)" available at <https://www.uspto.gov/patents-application-process/applying-online/efs-web-guidance-and-resources>.

Applicants may also use Form PTO/AIA/14 which may be printed and marked up to comply with 37 CFR 1.76(c).

[Page 3 of 4]

**Instructions for Petition to Accept an Unintentionally Delayed Claim under 35 U.S.C. 119(e)
for the Benefit of a Prior-Filed Provisional Application (37 CFR 1.78(c))**

(Not to be Submitted to the USPTO)

b. For applications filed before September 16, 2012, the reference to the prior-filed application may be made in a supplemental ADS in compliance with pre-AIA 37 CFR 1.76(c) or in an amendment in the first sentence(s) of the specification following the title. See 37 CFR 1.78(h).

Note: For applications filed before September 16, 2012, any ADS submitted after the filing date of the application is a supplemental ADS, regardless of whether an original ADS was submitted with the application papers on filing. Supplemental ADS papers must be labeled Supplemental ADS or Supplemental Application Data Sheet, include each of the seven section headings listed in pre-AIA 37 CFR 1.76(b) with all appropriate data for the section heading, and identify the information that is being changed. See pre-AIA 37 CFR 1.76(c). A supplemental ADS must also identify the application by application number and be properly signed. For more information regarding a supplemental ADS in an application filed before September 16, 2012, see MPEP 601.05(b), subsection II.

2. Petition fee

The petition fee is set forth in 37 CFR 1.17(m) and must be included with the petition. Petitioner is advised to refer to the current fee schedule at <https://www.uspto.gov/learning-and-resources/fees-and-payment/uspto-fee-schedule>.

3. Statement

37 CFR 1.78(c) requires a statement that the entire delay between the date the benefit claim was due under 37 CFR 1.78(a)(4) and the date the benefit claim was filed was unintentional. The required statement is included in this form.

Note: the Director may require additional information where there is a question whether the delay was unintentional.

[Page 4 of 4]

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/170,922	02/09/2021	Kyujin PARK	KT21-0101C1

CONFIRMATION NO. 1018

PUBLICATION NOTICE

126667
INVENSTONE PATENT, LLC
14291-A Brushwood way
Centreville, VA 20121



OC000000126054497

Title:METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK

Publication No.US-2021-0168785-A1

Publication Date:06/03/2021

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publicly available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <https://portal.uspto.gov/pair/PublicPair>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/170,922	02/09/2021	Kyujin PARK	KT21-0101C1

126667
INVENSTONE PATENT, LLC
14291-A Brushwood way
Centreville, VA 20121

CONFIRMATION NO. 1018
POA ACCEPTANCE LETTER



Date Mailed: 03/02/2021

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 02/25/2021.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/sibrahim/

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA/82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	17/170,922
Filing Date	February 9, 2021
First Named Inventor	Kyujin PARK
Title	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK
Art Unit	2463
Examiner Name	Not yet assigned
Attorney Docket Number	KT21-0101C1

SIGNATURE of Applicant or Patent Practitioner			
Signature	/Daniel CHUNG/	Date (Optional)	
Name	Daniel CHUNG	Registration Number	57889
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			
NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.			
☐ *Total of _____ forms are submitted.			

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Doc Code: PA..

Document Description: Power of Attorney

PTO/AIA/82B (07-13)

Approved for use through 11/30/2014. OMB 0651-0051

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☒ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:

126667

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☒ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

Firm or Individual Name				
Address				
City	State	Zip		
Country				
Telephone	Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

KT CORPORATION

☐ Inventor or Joint Inventor (title not required below)

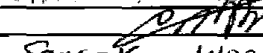
☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	
Name	Sang-Kyu Woo		
Title	Team leader, KT CORPORATION		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt	
EFS ID:	42017262
Application Number:	17170922
International Application Number:	
Confirmation Number:	1018
Title of Invention:	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK
First Named Inventor/Applicant Name:	Kyujin PARK
Customer Number:	126667
Filer:	Daniel Chung/judy Kim
Filer Authorized By:	Daniel Chung
Attorney Docket Number:	KT21-0101C1
Receipt Date:	25-FEB-2021
Filing Date:	09-FEB-2021
Time Stamp:	06:53:26
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	210225- KT21-0101C1_ADS_Letter.pdf	27436 b262882845ef08e2b3a3f9652df6acfffebea1f9	no	2

Warnings:

Information:					
2	Application Data Sheet	210225- KT21-0101C1_corrected_ADS. pdf	1819363 8a49edc41464cc973605e207819964b4a9f2dc1d	no	7
Warnings:					
Information:					
3	Transmittal Letter	210225- KT21-0101C1_POA_Letter.pdf	23754 66a09ea94f05e3aeba31bb2394b59d7c354cab14	no	1
Warnings:					
Information:					
4	Power of Attorney	210225-KT21-0101C1_POA.pdf	553533 cc6c02b32adc7666b57c704b2c63aab8fba dcec7	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			2424086		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

<i>In re</i> Patent Application of:	Docket No.: KT21-0101C1
Kyujin PARK et al.	Confirmation No.: 1018
Application No.: 17/170,922	Group Art Unit: 2463
Filed: 02-09-2021	Examiner: Not yet assigned
For: METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK	
Commissioner for Patents P.O. BOX 1450 Alexandria, VA 22313-1450	

REQUEST FOR CORRECTED FILING RECEIPT

Sir:

In response to the miscellaneous communication mailed on 02/23/2021, Applicant respectfully requests entry of the enclosed corrected Application Data Sheet.

In previous Application Data Sheet (ADS) filed on 02/09/2021, U.S. application number of parent application was inadvertently missing from a field of National Stage Information in the ADS. In order to correct this, the enclosed corrected Application Data Sheet (ADS) has been made, and it will clearly indicate that the current application (U.S. application No. 17/170,922) is a continuation of U.S. Application No. 16/346,108, filed on April 29, 2019, which is a National Stage Patent Application of PCT International Patent Application No. PCT/KR2017/012105, filed on October 30, 2017 under 35 U.S.C. §371, which claims priorities to Korean Patent Application Nos. 10-2016-0143013, filed on October 31, 2016 and 10-2017-0140898, filed on October 27, 2017.

Namely, prompt entry of the enclosed Corrected Application Data Sheet is respectfully requested.

Date: February 25, 2021

Respectfully Submitted,

By /Daniel Chung/

Daniel Chung

Registration No. 57,889

INVENSTONE Patent, LLC.

14291-A Brushwood Way

Centreville, VA 20121

703-879-5205

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor	1				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Kyujin		PARK			
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service						
City	Seoul	Country of Residence ⁱ		KR		
Mailing Address of Inventor:						
Address 1	Korea Telecom Research Center, Umyeon-dong 151					
Address 2	Taebong-ro, Seocho-gu					
City	Seoul	State/Province				
Postal Code	06763	Country ⁱ	KR			
Inventor	2				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Woo-jin		CHOI			
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service						
City	Seoul	Country of Residence ⁱ		KR		
Mailing Address of Inventor:						
Address 1	Korea Telecom Research Center, Umyeon-dong 151					
Address 2	Taebong-ro, Seocho-gu					
City	Seoul	State/Province				
Postal Code	06763	Country ⁱ	KR			
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button. Add						

Correspondence Information:

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence information of this application.**

Customer Number	126667		
Email Address	mail@invenstonepat.com	Add Email	Remove Email

Application Information:

Title of the Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		
Attorney Docket Number	KT21-0101C1	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	10	Suggested Figure for Publication (if any)	

Filing By Reference :

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	☒ Customer Number	US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	126667		

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the application number blank.

Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	16/346108	2019-04-29
Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
16/346108	a 371 of international	PCT/KR2017/012105	2017-10-30
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)ⁱ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ^j (if applicable)
10-2017-0140898	KR	2017-10-27	8040
			Remove
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ^j (if applicable)
10-2016-0143013	KR	2016-10-31	C34B
Additional Foreign Priority Data may be generated within this form by selecting the Add button.			Add

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013. NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices
If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application. In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application. In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		

Applicant	1	Remove
If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section. Clear		
☒ Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.		Person who shows sufficient proprietary interest
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:		

Name of the Deceased or Legally Incapacitated Inventor :			
If the Applicant is an Organization check here. ☒			
Organization Name	KT CORPORATION		
Mailing Address Information For Applicant:			
Address 1	206, Jeongja-dong 90, Buljeong-ro, Bundang-gu		
Address 2	Seongnam-si		
City	Gyeonggi-do	State/Province	
Country	KR	Postal Code	13606
Phone Number		Fax Number	
Email Address			
Additional Applicant Data may be generated within this form by selecting the Add button. Add			

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.	
Assignee	1
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication. Remove	
If the Assignee or Non-Applicant Assignee is an Organization check here. ☒	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		

Organization Name	KT CORPORATION
-------------------	----------------

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1	206, Jeongja-dong 90, Buljeong-ro, Bundang-gu		
Address 2	Seongnam-si		
City	Gyeonggi-do	State/Province	
Country i	KR	Postal Code	13606
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Signature	/Daniel CHUNG/		Date (YYYY-MM-DD)	2021-02-25	
First Name	Daniel	Last Name	CHUNG	Registration Number	57889

Additional Signature may be generated within this form by selecting the Add button.

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Docket No.: KT21-0101C1

Kyujin PARK et al.

Confirmation No.: 1018

Application No.: 17/170,922

Group Art Unit: 2463

Filed: 02/09/2021

Examiner: N/A

For: METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR
NEXT-GENERATION WIRELESS ACCESS NETWORK

TRANSMITTAL WITH POWER OF ATTORNEY

Commissioner for Patents

P.O. BOX 1450

Alexandria, VA 22313-1450

Sir:

Applicant respectfully requests entry of the enclosed new Power of Attorney. The
enclosed new Power of Attorney clearly identifies the party who is giving power.

Namely, prompt entry and acceptance of the enclosed Power of Attorney is respectfully
requested.

Date: February 25, 2021

Respectfully Submitted,

By /Daniel Chung/

Daniel Chung

Registration No. 57,889

INVENSTONE Patent, LLC.

14291-A Brushwood Way

Centreville, VA 20121

703-879-5205



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/170,922	02/09/2021	Kyujin PARK	KT21-0101C1

CONFIRMATION NO. 1018

IMPROPER CFR REQUEST



OC000000123553995

126667
INVENSTONE PATENT, LLC
14291-A Brushwood way
Centreville, VA 20121

Date Mailed: 02/23/2021

RESPONSE TO REQUEST FOR CORRECTED FILING RECEIPT

Continuity, Priority Claims, Petitions, and Non-Publication Requests

In response to your request for a corrected Filing Receipt, the Office is unable to comply with your request because:

Improper Priority Claim(s) to Prior-Filed Foreign Application(s)

The instant application was not filed within twelve (12) months from the filing date of the prior-filed foreign application, and there is no benefit claim to an intermediate nonprovisional or international application designating the United States filed within 12 months of the filing date of the foreign application. Applicant should review each priority claim submitted and, if appropriate, provide the proper reference to any intermediate application filed within 12 months of the filing date of the foreign application in compliance with 37 CFR 1.78, or delete the priority claim. For applications filed on or after September 16, 2012, applicant must submit a corrected application data sheet (ADS) to include a specific reference.

Alternatively, if the instant application (or intermediate application) was filed within 14 months of the prior foreign application, applicant may file a petition (in the instant application) to restore the right of priority if the delay in filing the application within the 12 month time period was unintentional. See 37 CFR 1.55 for the requirements of a petition to restore the right of priority.

For applications filed on or after September 16, 2012, applicant must submit a corrected application data sheet (ADS) to include a foreign priority claim.

Timeliness: The required reference for the benefit claim to an intermediate nonprovisional or international application designating the United States must be filed during the pendency of the instant application and within the later of: (1) four months from the actual filing date of the instant application, or the national stage commencement date if the instant application is a national stage application under 35 U.S.C. 371; or (2) sixteen months from the filing date of the prior-filed application. Failure to timely file the required reference is considered a waiver of any benefit claim, unless a grantable petition to accept an unintentionally delayed claim under 37 CFR 1.78, the petition fee set forth in 37 CFR 1.17(m), and the required reference are filed.

Prior-Filed Nonprovisional Application has been Improperly Indicated as a National Stage (35 U.S.C. 371) Application

Applicant submitted a benefit claim to a prior-filed nonprovisional application and improperly indicated that the prior-filed application is a national stage application under 35 U.S.C. 371. The Office's records show that the prior-filed application is an application filed under 35 U.S.C. 111(a). The Office has entered the benefit claim

to the prior-filed application as a benefit claim to an application filed under 35 U.S.C. 111(a). Any request for a corrected filing receipt to include the indication that the prior-filed application is a national stage application will not be granted unless applicant supplies evidence that the prior application was in fact a national stage application. Accordingly, applicant should not submit such request without such evidence. Applicant should submit a corrected application data sheet (ADS) to delete the indication that the prior-filed application is a national stage application.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/dnguyen/

PATENT APPLICATION FEE DETERMINATION RECORD						Application or Docket Number 17/170,922			
Substitute for Form PTO-875									
APPLICATION AS FILED - PART I									
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY			
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)		
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	320		
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A	700		
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	800		
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*				x 100 =	0.00		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x 480 =	0.00		
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00		
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00		
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1820		
APPLICATION AS AMENDED - PART II									
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)	
	Total (37 CFR 1.16(i))	* Minus **	=	x =			x =		
	Independent (37 CFR 1.16(h))	* Minus ***	=	x =			x =		
	Application Size Fee (37 CFR 1.16(s))								
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
TOTAL ADD'L FEE						TOTAL ADD'L FEE			
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)	
	Total (37 CFR 1.16(i))	* Minus **	=	x =			x =		
	Independent (37 CFR 1.16(h))	* Minus ***	=	x =			x =		
	Application Size Fee (37 CFR 1.16(s))								
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
TOTAL ADD'L FEE						TOTAL ADD'L FEE			
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.									



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
17/170,922	02/09/2021	2414	1820	KT21-0101C1	20	3

CONFIRMATION NO. 1018

FILING RECEIPT



0000000123353888

126667
INVENSTONE PATENT, LLC
14291-A Brushwood way
Centreville, VA 20121

Date Mailed: 02/23/2021

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Kyujin PARK, Seoul, KOREA, REPUBLIC OF;
Woo-jin CHOI, Seoul, KOREA, REPUBLIC OF;

Applicant(s)

KT CORPORATION, Gyeonggi-do, KOREA, REPUBLIC OF;

Assignment For Published Patent Application

KT CORPORATION, Gyeonggi-do, KOREA, REPUBLIC OF

Power of Attorney: The patent practitioners associated with Customer Number 126667

Domestic Priority data as claimed by applicant

This application is a CON of 16/346,108 04/29/2019

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: No

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 02/19/2021

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/170,922**

Projected Publication Date: 06/03/2021

Non-Publication Request: No

Early Publication Request: No

Title

METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR
NEXT-GENERATION WIRELESS ACCESS NETWORK

Preliminary Class

370

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

page 2 of 4

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop

technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

Doc Code: PA..

Document Description: Power of Attorney

PTO/AIA/82A (07-13)

Approved for use through 11/30/2014. OMB 0851-0051

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA/82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	Not yet assigned
Filing Date	Herewith
First Named Inventor	PARK, Kyujin
Title	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK
Art Unit	Not yet assigned
Examiner Name	Not yet assigned
Attorney Docket Number	KT21-0101C1

SIGNATURE of Applicant or Patent Practitioner			
Signature	/Daniel CHUNG/	Date (Optional)	
Name	Daniel CHUNG	Registration Number	57889
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			
NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.			
☐ *Total of _____ forms are submitted.			

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Doc Code: PA..

Document Description: Power of Attorney

PTO/AIA/82B (07-13)

Approved for use through 11/30/2014. OMB 0851-0051

U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

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POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☒ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:

126667

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☒ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

Firm or Individual Name				
Address				
City	State	Zip		
Country				
Telephone	Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

--

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	
Name	Sang-Kyu Woo		
Title	Team leader		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	
	Filing Date	
	First Named Inventor	Kyu Jin PARK
	Art Unit	
	Examiner Name	
	Attorney Docket Number	KT21-0101C1

U.S.PATENTS							Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	
	1						
If you wish to add additional U.S. Patent citation information please click the Add button.							Add
U.S.PATENT APPLICATION PUBLICATIONS							Remove
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	
	1	20140376422	A1	2014-12-25	Dai et al.		
	2	20140105191	A1	2014-04-17	Yang et al.		
	3	20190289605	A1	2019-09-19	FUTAKI		
	4	20150236828	A1	2015-08-20	Jonghyun Park et al.		
	5	20150215906	A1	2015-07-30	Jonghyun Park et al.		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	Kyujin PARK	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	KT21-0101C1	

6	20150215905	A1	2015-07-30	Jonghyun Park et al.	
7	20150229451	A1	2015-08-13	Jonghyun Park et al.	
8	20150289235	A1	2015-10-08	Jonghyun Park et al.	
9	20150208392	A1	2015-07-23	Jonghyun Park et al.	
10	20150016369	A1	2015-01-15	Jonghyun Park et al.	
11	20150173064	A1	2015-06-18	Kijun Kim et al.	
12	20160278055	A1	2016-09-22	Jonghyun Park et al.	
13	20150023265	A1	2015-01-22	Jonghyun Park et al.	
14	20160128037	A1	2016-05-05	Jonghyun Park et al.	
15	20150223208	A1	2015-08-06	Jonghyun Park et al.	
16	20170079018	A1	2017-03-16	Jonghyun Park et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	Kyujin PARK	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	KT21-0101C1	

	17	20170006589	A1	2017-01-05	Jonghyun Park et al.	
	18	20170064678	A1	2017-03-02	Jonghyun Park et al.	
	19	20150180625	A1	2015-06-25	Jonghyun Park et al.	
	20	20150029966	A1	2015-01-29	Jonghyun Park et al.	
	21	20150282126	A1	2015-10-01	Jonghyun Park et al.	
	22	20170208569	A1	2017-07-20	Jonghyun Park et al.	
	23	20170303252	A1	2017-10-19	Jonghyun Park et al.	
	24	20170208572	A1	2017-07-20	Jonghyun Park et al.	
	25	20170273061	A1	2017-09-21	Jonghyun Park et al.	
	26	20170353282	A1	2017-12-07	Jonghyun Park et al.	
	27	20170078066	A1	2017-03-16	Jonghyun Park et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	Kyujin PARK	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	KT21-0101C1	

	28	20170257855	A1	2017-09-07	Jonghyun Park et al.	
	29	20180070337	A1	2018-03-08	Jonghyun Park et al.	
	30	20170257853	A1	2017-09-07	Jonghyun Park et al.	
	31	20170195098	A1	2017-07-06	Jonghyun Park et al.	
	32	20180160409	A1	2018-06-07	Jonghyun Park et al.	
	33	20180227893	A1	2018-08-09	Jonghyun Park et al.	
	34	20120287848	A1	2012-11-15	Hak Seang Kim et al.	
	35	20140348057	A1	2014-11-27	Hak Seang Kim et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button.

FOREIGN PATENT DOCUMENTS								Remove
Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ² i	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
	1	10-2015-0060677	KR	A	2015-06-03	LG ELECTRONICS INC.		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	Kyujin PARK	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	KT21-0101C1	

	2	10-2011-0088432	KR	A	2011-08-03	LG ELECTRONICS INC.	
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If you wish to add additional Foreign Patent Document citation information please click the Add button

NON-PATENT LITERATURE DOCUMENTS Remove	
--	--

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
	1	NTEL CORPORATION, "On PUCCH coverage enhancement", R1-1609537, 3GPP TSG-RAN WG1 #86bis, Lisbon, Portugal, 10th - 14th October, 2016, pp. 1-5	
	2	EUROPEAN PATENT OFFICE, European Search Report of corresponding EP Patent Application No. 17865576.7, April 29, 2020	
	3	MOTOROLA MOBILITY, "Flexible frame structure and control signaling for NR", R1-1609919, 3GPP TSG RAN WG1 #86bis, Lisbon, Portugal, Oct 10-14, 2016, pp. 1-4	
	4	NTT DOCOMO, INC., "Remaining details on PUSCH resource allocation and scheduling design for eLAA", R1-167343, 3GPP TSG RAN WG1 Meeting #86, Gothenburg, Sweden 22nd - 26th August 2016, pp. 1-5	
	5	ERICSSON, "Handling overlapping allocations with short and 1 ms TTI", R1-167503, 3GPP TSG-RAN WG1 #86, Goteborg, Sweden, 22th - 26th August 2016, pp. 1-2	

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE	
---------------------------	--

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	Kyujin PARK	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	KT21-0101C1	

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Daniel CHUNG/	Date (YYYY-MM-DD)	2021-02-09
Name/Print	Daniel CHUNG	Registration Number	57889

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor : Kyujin PARK et al.
Serial No. : To be assigned
Filed : Herewith
Title : METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL
RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK

Commissioner for Patents
P.O. BOX 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Sir:

Please consider the references listed on the enclosed PTO-SB08 Form.

Under 35 USC §120, this application relies on the earlier filing date of application serial number 16/346,108, filed on April 29, 2019. All references listed on the PTO-SB08 Form were submitted to and/or cited by the Office in the prior application, and so copies of those references are not provided in this application.

This statement is being filed with the application.

The Commissioner is hereby authorized to charge any deficiency fees associated with this communication or credit any overpayment to Deposit Account No. 602040.

Please contact the undersigned if there are any questions regarding this statement.

Respectfully Submitted,

Date: February 9, 2021

By /Daniel J. Chung/
Daniel J. Chung
Registration No. 57,889

INVENSTONE Patent, LLC.
14291-A Brushwood way
Centreville, VA 20121
703-879-5205

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		
First Named Inventor/Applicant Name:		Kyujin PARK		
Filer:		Daniel Chung/judy Kim		
Attorney Docket Number:		KT21-0101C1		
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY APPLICATION FILING	1011	1	320	320
UTILITY SEARCH FEE	1111	1	700	700
UTILITY EXAMINATION FEE	1311	1	800	800
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1820

Electronic Acknowledgement Receipt	
EFS ID:	41871617
Application Number:	17170922
International Application Number:	
Confirmation Number:	1018
Title of Invention:	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK
First Named Inventor/Applicant Name:	Kyujin PARK
Customer Number:	126667
Filer:	Daniel Chung/judy Kim
Filer Authorized By:	Daniel Chung
Attorney Docket Number:	KT21-0101C1
Receipt Date:	09-FEB-2021
Filing Date:	
Time Stamp:	04:42:12
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$1820
RAM confirmation Number	E202129543053878
Deposit Account	602040
Authorized User	judy Kim
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)					
37 CFR 1.20 (Post Issuance fees)					
37 CFR 1.21 (Miscellaneous fees and charges)					
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.
1	Application Data Sheet	210209-KT21-0101C1_ADS.pdf	1819396	no	7
			64eda03b0258c2c6ce14f26afb3d74a54e157cea		
Warnings:					
Information:					
2		210209-KT21-0101C1_SPEC.pdf	538729	yes	53
			0370dc2e8f966b09b1d7ee7eed8011b2e3678da1		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	44	
	Claims		45	52	
	Abstract		53	53	
Warnings:					
Information:					
3	Drawings-only black and white line drawings	210209-KT21-0101C1_FIG.pdf	1901784	no	10
			eda2e3f340c4a8d3a20dce4c21364e311e1bf187		
Warnings:					
Information:					
4	Oath or Declaration filed	210209-KT21-0101C1_DEC.pdf	434724	no	2
			50e5317aa23a82824c7fd84a610567296249c3cf		
Warnings:					
Information:					
5	Power of Attorney	210209-KT21-0101C1_POA.pdf	535087	no	2
			86938e8b34d646af94175c1deb4658380a83fc8f		

Warnings:					
Information:					
6		210209- KT21-0101C1_preliminary_ame ndment.pdf	38100	yes	8
			b214320e7c139e1edf037c5adc6037e3ff8f6f76		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Preliminary Amendment		1	1	
	Specification		2	2	
	Claims		3	7	
	Applicant Arguments/Remarks Made in an Amendment		8	8	
Warnings:					
Information:					
7	Information Disclosure Statement (IDS) Form (SB08)	IDS_SB08-KT21-0101C1.pdf	1035860	no	7
			cdfa5c492063ebe6ae99840d9a514146ea436a0b		
Warnings:					
Information:					
8	Transmittal Letter	210209- KT21-0101C1_IDS_Letter.pdf	23176	no	1
			58be0a125783b90e8d42d9db08f815c4918e2db7		
Warnings:					
Information:					
9	Fee Worksheet (SB06)	fee-info.pdf	34870	no	2
			f8c45f293336c609bcc26e5b55c75f2b88202b44		
Warnings:					
Information:					
Total Files Size (in bytes):			6361726		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor	1				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Kyujin		PARK			
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service						
City	Seoul	Country of Residence ⁱ		KR		
Mailing Address of Inventor:						
Address 1	Korea Telecom Research Center, Umyeon-dong 151					
Address 2	Taebong-ro, Seocho-gu					
City	Seoul	State/Province				
Postal Code	06763	Country ⁱ	KR			
Inventor	2				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Woo-jin		CHOI			
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service						
City	Seoul	Country of Residence ⁱ		KR		
Mailing Address of Inventor:						
Address 1	Korea Telecom Research Center, Umyeon-dong 151					
Address 2	Taebong-ro, Seocho-gu					
City	Seoul	State/Province				
Postal Code	06763	Country ⁱ	KR			
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button. Add						

Correspondence Information:

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence information of this application.**

Customer Number	126667		
Email Address	mail@invenstonepat.com	Add Email	Remove Email

Application Information:

Title of the Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		
Attorney Docket Number	KT21-0101C1	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	10	Suggested Figure for Publication (if any)	

Filing By Reference :

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	☒ Customer Number	US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	126667		

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the application number blank.

Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	16/346108	2019-04-29
Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	a 371 of international	PCT/KR2017/012105	2017-10-30
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)ⁱ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ^j (if applicable)	Remove
10-2017-0140898	KR	2017-10-27	8040	
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ^j (if applicable)	Remove
10-2016-0143013	KR	2016-10-31	C34B	
Additional Foreign Priority Data may be generated within this form by selecting the Add button.				Add

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013. NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices
If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application. In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application. In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		

Applicant	1	Remove
If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section. Clear		
☒ Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.		Person who shows sufficient proprietary interest
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:		

Name of the Deceased or Legally Incapacitated Inventor :			
If the Applicant is an Organization check here. ☒			
Organization Name	KT CORPORATION		
Mailing Address Information For Applicant:			
Address 1	206, Jeongja-dong 90, Buljeong-ro, Bundang-gu		
Address 2	Seongnam-si		
City	Gyeonggi-do	State/Province	
Country	KR	Postal Code	13606
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	KT21-0101C1
		Application Number	
Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK		

Organization Name	KT CORPORATION
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METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR
NEXT-GENERATION WIRELESS ACCESS NETWORK

【TECHNICAL FIELD】

[1] The present disclosure relates to methods and devices for allocating a data channel resource for a next-generation/5G radio access network (hereinafter, referred to as a new radio (NR)).

【BACKGROUND ART】

[2] Recently, the 3GPP has approved the “Study on New Radio Access Technology”, which is a study item for research on next-generation/5G radio access technology. On the basis of the Study on New Radio Access Technology, Radio Access Network Working Group 1 (RAN WG1) has been discussing frame structures, channel coding and modulation, waveforms, multiple access methods, and the like for the new radio (NR). It is required to design the NR not only to provide an improved data transmission rate as compared with the long term evolution (LTE)/LTE-Advanced, but also to meet various requirements in detailed and specific usage scenarios.

[3] In particular, an enhanced mobile broadband (eMBB), massive machine-type communication (mMTC), and ultra reliable and low latency communication (URLLC) are

proposed as representative usage scenarios of the NR. In order to meet the requirements of the individual scenarios, it is required to design the NR to have flexible frame structures, compared with the LTE/LTE-Advanced.

[4] In the typical LTE/LTE-A system, the allocation of an uplink/downlink data resource has been performed on a resource block (RB) basis in the frequency axis and on a subframe basis in the time axis.

[5] Thus, in a downlink subframe, a UE receives downlink data through all OFDM symbols except for a control region for PDCCH transmission. In an uplink subframe, the UE transmits uplink data through all SC-FDMA symbols of the uplink subframe, or all SC-FDMA symbols except for the last symbol in case a SRS is configured.

[6] In this regard, in the NR, discussions have been conducted for allocating a time-domain resource as well as a frequency resource as a scheduling resource for an uplink/downlink data channel.

【DETAILED DESCRIPTION OF THE INVENTION】

【TECHNICAL PROBLEM】

[7] It is an object of the present disclosure to provide methods of a base station and a user equipment for allocating a time-domain resource for downlink data channel (PDSCH) or

uplink data channel (PUSCH) transmission/reception in the next-generation/5G radio access network (NR).

【TECHNICAL SOLUTION】

[8] In the NR, discussions have been in progress for frame structure, channel coding and modulation, waveform and multiple access schemes, or the like. It is required to design the NR not only to provide an improved data transmission rate as compared with the long term evolution (LTE)/LTE-Advanced, but also to meet various requirements in detailed and specific usage scenarios.

[9] In particular, an enhanced mobile broadband (eMBB), massive machine-type communication (mMTC), and ultra reliable and low latency communication (URLLC) are proposed as representative usage scenarios of the NR. In order to meet the requirements of the individual scenarios, it is required to design the NR to have flexible frame structures, compared with the LTE/LTE-Advanced.

[10] In the typical LTE/LTE-A system, an uplink/downlink data resource is allocated on a resource block (RB) basis in the frequency axis and on a subframe basis in the time axis.

[11] Thus, in a downlink subframe, a UE receives downlink data through all OFDM symbols except for a control region for PDCCH transmission. In an uplink subframe, the UE transmits uplink data through all SC-FDMA symbols of the uplink subframe, or all SC-FDMA

symbols except for the last symbol in case a SRS is configured.

[12] In this regard, in the NR, discussions have been conducted for allocating a time-domain resource as well as a frequency resource as a scheduling resource for an uplink/downlink data channel.

【EFFECTS OF THE INVENTION】

[13] In accordance with embodiments of the present disclosure, in the NR, it is possible for a base station and a user equipment to transmit/receive a downlink data channel (PDSCH) or an uplink data channel (PUSCH) through methods of allocating a time-domain resource,

【BRIEF DESCRIPTION OF THE DRAWINGS】

[14] FIG. 1 is a diagram illustrating allocating a symbol-level resource for different SCSs.

[15] FIG. 2 is a diagram illustrating multiplexing based on the time division multiple (TDM) technique between the enhanced mobile broadband (eMBB) and the ultra-reliable and low latency communication (URLLC) in one slot.

[16] FIG. 3 is a flowchart illustrating a method of a base station for allocating a time-domain resource in order to transmit/receive a downlink (DL) data channel (PDSCH) or an

uplink (UL) data channel (PUSCH) according to embodiments of the present disclosure.

[17] FIG. 4 is a diagram illustrating an information sequence of UE-specific higher layer signaling including time-domain resource configuration information in a table form for downlink (DL) data channel (PDSCH) transmission/reception as in FIG. 3.

[18] FIG. 5 is a diagram illustrating a part of a format of DL assignment DCI (DL control information) as in FIG. 3.

[19] FIG. 6 is a diagram illustrating an information sequence of UE-specific higher layer signaling including time-domain resource configuration information in the form of a table for transmitting/receiving the UL data channel (PUSCH) as in FIG. 3.

[20] FIG. 7 is a diagram illustrating a part of a format of UL grant DCI (DL control information) as in FIG. 3.

[21] FIG. 8 is a flowchart illustrating a method of a base station for allocating a time-domain resource for downlink (DL) data channel (PDSCH) or uplink (UL) data channel (PUSCH) transmission/reception according to an embodiment of the present disclosure.

[22] Fig. 9 is a block diagram illustrating a base station (BS) according to an embodiment of the present disclosure.

[23] FIG. 10 is a block diagram illustrating a user equipment (UE) according to an embodiment of the present disclosure.

【BEST MODE FOR CARRYING OUT THE INVENTION】

[24] Hereinafter, embodiments of the present disclosure will be described in detail with reference to the accompanying drawings. In adding reference numerals to elements in each drawing, the same elements will be designated by the same reference numerals, if possible, although they are shown in different drawings. Further, in the following description of the present disclosure, a detailed description of known functions and configurations incorporated herein will be omitted when it is determined that the description may make the subject matter of the present disclosure rather unclear.

[25] In the present disclosure, an machine type communication (MTC) terminal may refer to a terminal supporting low cost (or low complexity), a terminal supporting coverage enhancement, or the like. In the present disclosure, the MTC terminal may refer to a terminal supporting low cost (or low complexity), a terminal supporting coverage enhancement, and the like. In addition, in the present disclosure, the MTC terminal may refer to a terminal classified into a specific category for supporting low cost (or low complexity) and/or coverage enhancement.

[26] In other words, the MTC terminal may refer to a low cost (or low complexity) UE category/type newly defined in 3GPP Release-13 and performing LTE-based MTC-related operations. The MTC terminal may refer to a UE category/type defined in or before 3GPP

Release-12, which supports enhanced coverage in comparison with the typical LTE coverage or supports low power consumption. Or, the MTC device may refer to a low cost (or low complexity) UE category/type newly defined in Release-13.

[27] In the present disclosure, a wireless communication system is widely deployed to provide various communication services, such as a voice communication service, a packet data service, etc. The wireless communication system includes a user equipment (UE) and a base station (BS, eNB, gNB, or xNB). In the present disclosure, the UE is defined as a generic term referring to terminals used in wireless communication. For example, the UE may be referred to, but not limited to, a UE supporting wideband code division multiple access (WCDMA), long term evolution (LTE), high speed packet access (HSPA), or international mobile telecommunications (IMT)-2020 (5G or new radio), , a mobile station (MS) supporting the global system for mobile communication (GSM), a user terminal (UT), a subscriber station (SS), a wireless device, or the like.

[28] The base station or a cell generally refers to a station communicating with the UE. The base station or the cell is a generic term referring to, but not limited to, all of various communication service areas and devices, such as a Node-B, an evolved Node-B (eNB), a gNode-B (gNB), a low power node (LPN), a sector, a site, various types of antennas, a base transceiver system (BTS), an access point, a point (e.g., a transmitting point, a receiving point, or

a transceiving point), a relay node, a megacell, a macrocell, a microcell, a picocell, a femtocell, a remote radio head (RRH), a radio unit (RU), and a small cell.

[29] That is, in the present disclosure, the base station or the cell is defined as a generic term collectively including, as well as some communication service areas or functions covered by a base station controller (BSC) in CDMA, a Node-B in the WCDMA, an evolved Node-B (eNB) or a sector (site) in the LTE, and the like, all of various coverage areas, such as a megacell, a macrocell, a microcell, a picocell, a femtocell and a relay node, RRH, RU, a small cell communication range, or the like.

[30] Each of the various cells is controlled by a base station. Therefore, the base station may be classified into two categories. The base station may be referred to 1) an apparatus that forms and provides a corresponding communication service area, such as a megacell, a macrocell, a microcell, a picocell, a femtocell, or a small cell, or 2) a communication service area. In the case of 1), the base station may be referred to i) apparatuses that form and provide a communication service area and are controlled by the same entity or ii) apparatuses that interact and cooperate with each other for forming and providing the communication service area. According to communication schemes employed by a base station, the base station may be referred to as an eNB, a RRH, an antenna, a RU, a low power node (LPN), a point, a transmission/reception point, a transmission point, a reception point, or the like. In the case of 2),

the base station may be a communication service area itself where UEs able to receive signals from or transmit signals to other UEs and neighboring base stations.

[31] Accordingly, the base station is defined as a generic term collectively including the megacell, the macrocell, the microcell, the picocell, the femtocell, or the small cell, the RRH, the antenna, the RU, the LPN, the point, the eNB, the transmission/reception point, the transmission point, or the reception point.

[32] In the present disclosure, the UE and the base station are two entities for performing transmission/reception used to embody the technology and technical spirit described in the present specification. The UE and the base station are defined as a generic term and not limited to specific terms or words. The UE and the base station are two entities for performing uplink or downlink transmission/reception used to embody the technology and technical spirit described in the present disclosure. The UE and the base station are defined as a generic term and not limited to specific terms or words. Herein, the uplink (UL) refers to data transmission/reception by a UE to/from a base station, and the downlink (DL) refers to data transmission/reception by a base station to/from a UE.

[33] Any of multiple access techniques may be applied to the wireless communication system. For example, the wireless communication system may employ various multiple access techniques, such as code division multiple access (CDMA), time division

multiple access (TDMA), frequency division multiple access (FDMA), orthogonal frequency division multiple access (OFDMA), OFDM-TDMA, OFDM-FDMA, OFDM-CDMA, or the like. Embodiments according to the present disclosure may be apply to resource allocation in i) asynchronous wireless communication evolving into LTE/LTE-advanced and IMT-2020 from GSM, WCDMA, and HSPA, ii) synchronous wireless communication evolving into CDMA, CDMA-2000, and UMB. The present disclosure is not construed to be limited to or limited to a particular wireless communication field and is construed as including all technical fields to which the spirit of the present disclosure may be applied.

[34] UL transmission and DL transmission may be performed based on i) a time division duplex (TDD) technique performing transmission through different time slots or ii) a frequency division duplex (FDD) technique performing transmission through different frequencies.

[35] Further, in some systems, such as the LTE or LTE-advanced, a related standard specification defines an UL and a DL to be established based on a single carrier or a pair of carriers. For transmitting/receiving control information, the UL and the DL may be configured with one or more control channels, such as a physical DL control channel (PDCCH), a physical control format indicator channel (PCFICH), a physical hybrid ARQ indicator channel (PITCH), a physical UP control channel (PUCCH), an enhanced physical DL control channel (EPDCCH), or

the like. For transmitting/receiving data, the UL and the DL may be configured with one or more data channels, such as a physical DL shared channel (PDSCH), a physical UL shared channel (PUSCH), or the like.

[36] Meanwhile, the control information may be transmitted through the EPDCCH (enhanced PDCCH or extended PDCCH).

[37] In the present disclosure, the cell may refer to a coverage of a signal transmitted from a transmission point or a transmission/reception point, a component carrier having the coverage of the signal transmitted from the transmission point or the transmission/reception point, or the transmission/reception point itself.

[38] A wireless communication system to which at least one embodiment is applied may be i) a coordinated multi-point transmission/reception system (CoMP system) in which two or more transmission/reception points cooperate to transmit a signal, ii) a coordinated multi-antenna transmission system, or iii) a coordinated multi-cell communication system. The CoMP system may include at least two multiple transmission/reception points and UEs.

[39] The multiple transmission/reception points may be a base station (BS) or a macrocell (hereinafter, referred to as 'eNB') and at least one RRH that is connected to the eNB through an optical cable or an optical fiber, controlled in a wired manner, and has high transmission power or low transmission power in a macrocell area.

[40] Hereinafter, the DL denotes communication or a communication path from multiple transmission/reception points to a UE, or the UL denotes communication or a communication path from the UE to the multiple transmission/reception points. In the DL, a transmitter may be a part of multiple transmission/reception points, and a receiver may be a part of the UE. In the UL, a transmitter may be a part of the UE, and a receiver may be a part of multiple transmission/reception points.

[41] Hereinafter, transmission and reception of a signal through the PUCCH, the PUSCH, the PDCCH, the EPDCCH, or the PDSCH, may be described as the transmission and reception of the PUCCH, the PUSCH, the PDCCH, the EPDCCH, or the PDSCH.

[42] In addition, a description of transmitting or receiving a PDCCH or a description of transmitting or receiving a signal through the PDCCH may be used as meaning including transmitting or receiving an EPDCCH/MPDCCH or transmitting or receiving a signal through the EPDCCH/MPDCCH.

[43] That is, a physical DL control channel described below may mean the PDCCH or the EPDCCH, or is also used as meaning including both the PDCCH and the EPDCCH/MPDCCH.

[44] Also, for convenience of description, the EPDCCH/MPDCCH may be applied to an embodiment including the PDCCH, as an embodiment of the present disclosure, and the

PDCCH may be also applied to an embodiment including the EPDCCH/MPDCCH as an embodiment of the present disclosure.

[45] Meanwhile, higher layer signaling described below includes radio resource control (RRC) signaling transmitting RRC information containing an RRC parameter.

[46] The base station performs DL transmission to UEs. The base station may transmit a physical DL shared channel (PDSCH) which is a primary physical channel for unicast transmission, and a physical DL control channel (PDCCH) for transmitting i) DL control information such as scheduling required to receive the PDSCH and ii) scheduling approval information for transmission through an UL data channel (for example, a physical UL shared channel (PUSCH)). Hereinafter, transmitting/receiving a signal through each channel may be described in such a manner that a corresponding channel is transmitted/received.

[47] 5G New Radio (NR)

[48] Recently, the 3GPP has approved the “Study on New Radio Access Technology”, which is a study item for research on next-generation/5G radio access technology. On the basis of the Study on New Radio Access Technology, discussions have been in progress for frame structures, channel coding and modulation, waveforms, multiple access schemes, and the like for the NR.

[49] It is required to design the NR only to provide improved data transmission

rates compared with the long term evolution (LTE)/LTE-Advanced, but also to meet various requirements in detailed and specific usage scenarios. In particular, an enhanced mobile broadband (eMBB), massive machine-type communication (mMTC), and ultra reliable and low latency communication (URLLC) are proposed as representative usage scenarios of the NR. In order to meet the requirements of the individual scenarios, it is required to design the NR to have more flexible frame structures compared with the LTE/LTE-Advanced.

[50] Specifically, the eMBB, mMTC, URLLC are considered as representative usage scenarios of the NR by the 3GPP. Each usage scenario imposes different requirements for data rates, latency, coverage, etc. Accordingly, there have been discussions for efficiently multiplexing a radio resource unit based on different numerologies (e.g., a subcarrier spacing (SCS), a subframe, a transmission time interval (TTI), etc.), as a method for satisfying requirements according to usage scenarios through a frequency band of an NR system.

[51] To support requirements, there also have been discussions on i) a method of multiplexing at least one numerology each having different subcarrier spacing values from another over one NR carrier using TDM, FDM or TDM/FDM technique, and ii) a method of supporting one or more time units in configuring a scheduling unit in the time domain.

[52] In this regard, in the NR, a subframe has been defined as one type of time domain structure. A single subframe duration having 14 OFDM symbols of 15 kHz sub-carrier

spacing (SCS)-based normal CP overhead, like the LTE has been defined as a reference numerology for defining the subframe duration.

[53] Therefore, the subframe of the NR has a time duration of 1 ms. However, unlike the LTE, since the subframe of the NR is an absolute reference time duration, a slot and a mini-slot may be defined as a time unit used for an actual UL/DL data scheduling.

[54] In this case, the number of OFDM symbols forming a slot, a value of y , has been defined as $y = 14$ regardless of the numerology.

[55] Therefore, a slot may be formed of 14 symbols. In addition, according to transmission direction for the slot, all symbols may be used for DL transmission or UL transmission, or the symbols may be used in the configuration of a DL portion + a gap + an UL portion.

[56] Further, a mini-slot formed of fewer symbols than the typical slot has been defined in a numerology (or SCS). Therefore, a short time-domain scheduling interval for UL/DL data transmission/reception may be set based on the mini-slot. Also, a long time-domain scheduling interval for UL/DL data transmission/reception may be set using slot aggregation.

[57] Particularly, as in the URLLC, in case latency critical data are transmitted/received, it may be difficult to satisfy a latency requirement when scheduling is

performed based on a unit of a slot based on 1 ms defined in a frame structure based on a numerology having a small SCS value, for example, 15 kHz. To this end, it is possible to define a mini-slot formed of fewer orthogonal frequency division multiple symbols than the typical slot. Thus, it is possible to define the scheduling for the latency critical data, as in the URLLC, to be performed based on the mini-slot.

[58] Further, methods have been discussed for scheduling data according to latency requirements based on the length of a slot (or a mini-slot) defined in each numerology, by multiplexing and supporting numerologies each having different SCS values from another in one NR carrier, using the TDM or FDM technique, as described above.

[59] For example, since the length of a symbol for a SCS of 60 kHz as shown in FIG. 1 is shortened by about a fourth of that for the SCS of 15 kHz, when one slot is formed of seven OFDM symbols in both the cases, the length of the slot based on the SCS of 15 kHz is 0.5 ms, whereas the length of the slot based on the SCS of 60 kHz is shortened to about 0.125 ms.

[60] As described above, methods of satisfying each requirement of URLLC and eMBB have been discussed by defining different SCSs or different TTI lengths in the NR.

[61] **Timing relationship between control information and data**

[62] In the NR, as a method of determining HARQ ACK/NACK feedback timing for DL data reception of a UE, it is considered that the feedback timing is i) dynamically

configured by L1 signaling (e.g. DL control information (DCI)), ii) semi-statically configured by higher layer, or iii) configured in combination of the higher layer and the dynamical L1 signaling.

[63] In addition, as a method of determining timing between UL assignment and corresponding UL data transmission, it is also considered that the timing is i) dynamically configured by L1 signaling (e.g. DCI), ii) semi-statically configured by higher layer, or iii) configured in combination of the higher layer and the dynamical L1 signaling.

[64]

Agreements:

- Timing relationship between DL data reception and corresponding acknowledgement can be (one or more of, FFS which ones)
 - dynamically indicated by L1 signaling (e.g., DCI)
 - semi-statically indicated to a UE via higher layer
 - a combination of indication by higher layers and dynamic L1 signaling (e.g., DCI)
- FFS: minimum interval between DL data reception and corresponding acknowledgement
- FFS: common channels (e.g. random access)

Agreements:

- Timing relationship between UL assignment and corresponding UL data transmission can be (one or more of, FFS which ones)
 - dynamically indicated by L1 signaling (e.g., DCI)
 - semi-statically indicated to a UE via higher layer
 - a combination of indication by higher layers and dynamic L1 signaling (e.g., DCI)
- FFS: minimum interval between UL assignment and corresponding UL data transmission
- FFS: common channels (e.g. random access)

[65] Furthermore, it may be considered that timing between DL assignment and corresponding DL data reception is i) dynamically configured by L1 signaling (e.g. DCI), ii) semi-statically configured by higher layer, or iii) configured in combination of the higher layer and the dynamical L1 signaling.

[66] In accordance with embodiments of the present disclosure, a method is provided for configuring DL control information for supporting a method for multiplexing and transmitting/receiving URLLC data based on a short TTI length and eMBB data based on a long TTI length in a given frequency resource using the TDM technique.

[67] In the typical LTE/LTE-A system, the allocation of an UL/DL data resource has been performed on a resource block (RB) basis in the frequency axis and on a subframe basis in the time axis.

[68] Specifically, in the LTE/LTE-A system, for allocating a resource to a DL data channel (PDSCH), PDSCH transmission resource allocation information is transmitted by corresponding DL assignment DCI in the same subframe. UL grant DCI indicates PUSCH transmission resource allocation information of an UL subframe after 4 subframes.

[69] Thus, in a DL subframe, a UE has performed reception operations for DL data through all OFDM symbols except for a control region for PDCCH transmission. In an UL subframe, the UE has transmitted UL data through all SC-FDMA symbols of the UL subframe,

or all SC-FDMA symbols except for the last symbol in case a SRS is configured.

[70] As described above, in the NR, a slot may be defined as a time domain scheduling unit (or TTI) in a frame structure based on a SCS value. Additionally, resource allocation to URLLC data sensitive to latency may be performed based on a unit of a mini-slot or a unit of a slot based on a larger SCS.

[71] To this end, it is possible to configure separately, in the frequency band, a resource block (RB) of the NR for allocating a resource based on a unit of a short time domain scheduling unit (or TTI) such as a slot based on a larger SCS, or a mini-slot based on a smaller SCS and an RB of the NR for allocating a resource based on a unit of a long time domain scheduling unit (or TTI) such as a slot based on a smaller SCS.

[72] However, as shown in FIG. 2, it is possible to perform multiplexing and transmitting/receiving each of URLLC data and eMBB data in each time domain scheduling unit (or TTI) using TDM technique in the same frequency band and RB. Accordingly, it is possible to increase the efficiency of resource use for multiplexing based on the FDM technique in the frequency axis.

[73] In this case, it is necessary for resource allocation information on a symbol or a group of symbols basis to be indicated additionally in a scheduling unit for an NR UE on which a time domain scheduling unit (or TTI) having a longer time interval, such as the eMBB or the

mMTC is defined.

[74] Accordingly, in accordance with embodiments of the present disclosure, as a method of allocating a resource to UL/DL data channel (e.g., NR PDSCH or NR PUSCH) for a UE, i) allocation information of frequency resource (RB) and ii) OFDM symbol allocation information on a OFDM symbol or a group of symbols basis configuring a time domain scheduling unit (TTI) set for the UE may be included in DL control information for transmitting scheduling control information for the UL/DL data channel.

[75] Hereinafter, according to Embodiments 1 and 2, basic concept will be discussed for allocating time-domain resource using OFDM symbol allocation information based on a unit of an OFDM symbol or a group of symbols configuring a time domain scheduling unit (TTI) set for a UE. Thereafter, methods of a UE and a base station will be discussed for allocating the time-domain resource.

[76] Embodiment 1. Allocating on a symbol basis

[77] As a method of configuring symbol allocation information on UL/DL data through a DL control information, it is possible to configure bitmap-based symbol allocation information for all symbols formed of a TTI set for a UE. Then the configured information may be included in UL/DL data allocation DL control information.

[78] For example, for an NR UE on which a time domain scheduling unit (or TTI) is

set as a unit of a slot formed of 14 symbols based on SCS 15kHz, in configuring DL control information for transmitting UL/DL data scheduling control information for the NR UE, the control information may include a symbol allocation information area including a bitmap of 14 bits.

[79] In this case, each bit forming bitmap configuration information of 14 bits is mapped to 1: 1 on 14 symbols of the slot formed of the TTI, and according to the configuration information, a base station and the UE may additionally configure/obtain symbol allocation information to be used for data transmission/reception in a slot allocated for each UL/DL data transmission/reception.

[80] As another method of configuring symbol allocation information on UL/DL data through DL control information, bitmaps for all symbols formed of a TTI set for a UE may be formed based on a unit of a group of symbols. Then the formed bitmap may be included in UL/DL data allocation DL control information.

[81] At this time, a symbol size mapped to each bit forming the bitmap may be determined by a slot size based on i) a mini-slot defined for latency sensitive data such as URLLC in a TTI, or ii) a longer SCS.

[82] For example, for an NR UE on which a TTI is set as a unit of a slot formed of 14 symbols based on 15kHz, in case 6 mini-slots formed of (2 symbols, 2 symbols, 3 symbols, 2

symbols, 2 symbols, 3 symbols) is defined in one symbol to support a short TTI for latency sensitive data, such as URLLC, in a corresponding cell, in configuring DL control information for transmitting UL/DL data scheduling control information for the NR UE, for the control information may include a symbol allocation information area including a bitmap of 6 bits.

[83] In this case, each bit forming bitmap configuration information of 6 bits is mapped to 1: 1 on a group of symbols forming 3 mini-slots (e.g., the mini-slot formed of the 2 symbols or 3 symbols) defined in the slot, and according to the configuration information, a base station and the UE may additionally configure/obtain symbol allocation information to be used for data transmission/reception in a slot allocated for each UL/DL data transmission/reception.

[84] In this case, the size of the group of symbols used as a unit of symbol allocation (e.g., the number of symbols forming one symbol group) and the number of symbol groups (a corresponding bitmap size) may be determined by i) the size of a TTI set for the UE and ii) the size of a short TTI formed in the TTI (the size of a mini-slot corresponding to the short TTI, e.g., 2 symbols or 3 symbols in the above example) and the number of the short TTIs (6 TTIs in the above example). In this regard, a predefined value may be defined according to a SCS value supported by the cell and a SCS value and a TTI size used in a corresponding UE, or the configuration may be performed by a base station through cell-specific/UE-specific high layer signaling.

[85] As another method of configuring symbol allocation information on UL/DL data through DL control information, a symbol allocation candidate table may be formed for all symbols formed of a TTI set for a UE. Then, a base station may include and transmit symbol allocation index indication information based on the table on DL control information.

[86] For example, for an NR UE on which a TTI is set based on a unit of a slot formed of 14 symbols based on 15kHz, a symbol allocation candidate table may be formed as in the following Table 1.

[87]

[Table 1]

Symbol allocation field in DCI	Allocated symbol indices for PDSCH(or PUSCH)
000	0,1,2,3,4,5,6,7,8,9,10,11,12,13
001	1,2,3,4,5,6,7,8,9,10,11,12,13
010	2,3,4,5,6,7,8,9,10,11,12,13
011	3,4,5,6,7,8,9,10,11,12,13
100	0,1,2,3,4,5,6,7,8,9,10,11,12
101	1,2,3,4,5,6,7,8,9,10,11,12
110	2,3,4,5,6,7,8,9,10,11,12
111	3,4,5,6,7,8,9,10,11,12

[88] It is possible to configure/obtain allocation information of a symbol to be used actually for UL/DL data transmission/reception for the UE among 14 symbols from #0 to #13 formed of a TTI defined for a UE.

[89] It is noted that the symbol allocation table may be predefined with a SCS value

or a TTI size supported by a corresponding cell, or be configured by a base station through cell-specific/UE-specific RRC signaling.

[90] As another example, each of OFDM symbol (or SC-FDMA symbol) allocation information and indexes indicating the symbol allocation information for each UE may be included in a table form, as shown in Table 2. At this method, each of the OFDM symbol (or SC-FDMA symbol) allocation information may include respective starting OFDM symbols (or SC-FDMA symbols) and lengths. Hereinafter, an OFDM symbol may be used as a meaning including a SC-FDMA symbol.

[91]

[Table 2]

Index	OFDM symbol (or SC-FDMA symbol) allocation information	
	Starting OFDM symbol	Length
0	0	4
1	0	5
2	0	6
3	1	3
4	1	4
5	1	5
6	2	2
7	2	3
8	2	4
9	3	1
10	3	2
11	3	3
12	4	1
13	4	2
14	5	1
15	reserved	reserved

[92] That symbol allocation candidate table includes OFDM symbol (or SC-FDMA symbol) allocation information and the related indexes for each UE, as shown in Table 2, means that a base station or a UE maps and stores OFDM symbol (or SC-FDMA symbol) allocation information on the indexes.

[93] A symbol allocation candidate table may be formed for all symbols formed of a TTI set for a UE. For example, for an NR UE on which a TTI is set based on a unit of a slot formed of 14 symbols based on 15kHz, as described above, a symbol allocation candidate table may be formed as shown in the Table 1 or 2. It is noted that the symbol allocation table may be predefined with a SCS value or a TTI size supported by a corresponding cell, or be configured by a base station through cell-specific/UE-specific RRC signaling.

[94] For example, the base station may transmit the symbol allocation information in the form of a table for UL/DL data channel transmission/reception to the UE through UE-specific RRC signaling. The UE may receive the symbol allocation information in the form of a table for UL/DL data channel transmission/reception from the base station through UE-specific high layer signaling, such as RRC signaling.

[95] Furthermore, in forming the symbol allocation table, a symbol allocation table for a DL data channel(e.g., a PDSCH) and a symbol allocation table for an UL data channel (e.g., a PUSCH) may be separately defined, or a base station may form the symbol allocation table and

transmit the formed table to each UE through UE-specific high layer signaling, such as RRC signaling for each UE.

[96] Thus, in case the symbol allocation table is formed as shown in the Table 1 or 2, as described above, a base station may include index indication information based on a PDSCH symbol allocation table formed for a UE in DL allocation DCI. Thus, the base station may indicate, to the UE, OFDM symbol resource allocation information for the PDSCH. Likewise, the base station may include index indication information based on a PUSCH symbol allocation table formed for the UE in UL grant DCI. The base station may indicate, to the UE, OFDM symbol resource allocation information for the PUSCH.

[97] Embodiment 2. Configuration of symbol-level allocation

[98] Additionally, the symbol allocation described in the Embodiment 1 may be configured by a base station through cell-specific/UE-specific RRC signaling.

[99] Thus, in case symbol-level allocation is configured through cell-specific/UE-specific RRC signaling (e.g., enabled), the symbol allocation information area may be included in DL allocation DL control information and/or UL allocation DL control information for an NR UE.

[100] On the contrary, in case symbol-level allocation is not configured through cell-specific/UE-specific RRC signaling (e.g., disabled), the symbol allocation information area

may not be included in DL allocation DL control information and/or UL allocation DL control information for an NR UE.

[101] As another example, the symbol allocation described in the Embodiment 1 may be enabled or disabled implicitly according to a SCS value and a TTI length defined for a UE.

[102] For example, for an NE UE operating based on a smaller SCS value than a specific threshold value, in case a TTI length set for the UE is larger than a predetermined value, the symbol allocation information area may be included in DL allocation DL control information and/or UL allocation DL control information for the UE.

[103] On the contrary, in case an NE UE is operated based on a smaller SCS value than a specific threshold value and a TTI length set for the UE is smaller than a predetermined value, or an NE UE is operated based on a larger SCS value than the predetermined value, the symbol allocation information area may not be included in DL allocation DL control information and/or UL allocation DL control information for the UE.

[104] FIG. 3 is a flowchart illustrating a method of a base station for allocating a time-domain resource for DL data channel (PDSCH) transmission/reception or UL data channel (PUSCH) transmission/reception according to embodiments of the present disclosure.

[105] Referring to FIG. 3, a method 300 of a base station may be provided for allocating a time-domain resource for DL data channel (PDSCH) transmission/reception or UL

data channel (PUSCH) transmission/reception in accordance with at least one embodiment. The method 300 includes allocating the time-domain resource based on a slot or a mini-slot as a unit of an OFDM symbol (or SC-FDMA symbol) and at the same time, transmitting, to a UE, time-domain resource configuration information including OFDM symbol (or SC-FDMA symbols) allocation information for OFDM symbols (or SC-FDMA symbols) used for data channel transmission/reception in the slot or the mini-slot, and transmitting, to the UE, control information selecting one of symbol allocation information included in the time-domain resource configuration information.

[106] In order to allocate the time-domain resource for the DL data channel (PDSCH) transmission/reception, the time-domain resource configuration information may include, in the form of a table as shown in the Table 2, OFDM symbol allocation information and indexes indicating each of the symbol allocation information for each UE. The OFDM symbol allocation information for the DL data channel (PDSCH) transmission/reception may include one or more starting OFDM symbols and one or more lengths.

[107] In this case, the time-domain resource configuration information includes the OFDM symbol allocation information and the indexes for each UE in the form of a table as shown in the Table 2. It means that a base station or a UE maps and stores the OFDM symbol allocation information on the indexes. Or, it also means that the OFDM symbol allocation

information and the indexes are included in data and/or control information or a signal and then transmitted/received to/from other transmission/reception entities.

[108] A symbol allocation candidate table may be formed for all symbols formed of a TTI set for a UE. For example, for an NR UE on which a TTI is set as a unit of a slot formed of 14 symbols based on 15kHz, as described above, a symbol allocation candidate table may be formed as shown in the Table 1 or 2. It is noted that the symbol allocation table may be predefined with a SCS value or a TTI size supported by a corresponding cell, or be configured by a base station through cell-specific/UE-specific RRC signaling.

[109] FIG. 4 is a diagram illustrating an information sequence of UE-specific higher layer signaling including time-domain resource configuration information in the form of a table for transmitting/receiving the DL data channel (PDSCH) as shown in FIG. 3.

[110] In the step S310 of transmitting time-domain resource configuration information to a UE, a base station may transmit, to the UE, time-domain resource configuration information 400 in the form of a table for transmitting/receiving a DL data channel (PDSCH) through UE-specific high layer signaling, such RRC signaling, as shown in FIG. 4.

[111] The base station may configure PDSCH time-domain resource configuration information in the form of a table as shown in the Table 1 or 2, and transmit the configured information to the UE through the RRC signaling. When configuring PDSCH time-domain

resource configuration information in the form of a table as shown in the Table 1 or 2 and transmitting the configured information to the UE through the RRC signaling, the base station may include, in the PDSCH time-domain resource configuration information, i) information area (e.g., information area formed of 3 bits for indicating indexes 0 to 7 in the case of the Table 1, or formed of 4 bits for indicating indexes 0 to 15 in the case of the Table 2) for indicating each index forming the symbol allocation table and ii) OFDM symbol allocation information corresponding to each index, which is mapped to a specific value. Thus, the base station may transmit the PDSCH time-domain resource configuration information including the information area and the OFDM symbol allocation information mapped to the specific value to the UE through an RRC message (e.g., PDSCH time-domain resource configuration message).

[112] As another example, the base station and the UE may predefine time-domain resource configuration information in the form of a table for PDSCH transmission as shown in the Table 1 or 2, and the base station may transmit table entry information to use for PDSCH symbol allocation for a UE to the UE through RRC signaling. For example, in case PDSCH time-domain resource configuration information in the form of a table as shown in the Table 2 is predefined in a base station and a UE, the base station may transmit entry-related information to use in the UE of the PDSCH time-domain resource configuration information through RRC signaling. That is, the base station may configure index information to use for PDSCH symbol

allocation of the UE among indexes 0 to 15 of the Table 2 (e.g., an index value to use or index interval related information to use) and transmit the configured information to the UE through an RRC message (e.g., PDSCH time-domain resource configuration message).

[113] In the step S320 of transmitting control information to the UE, the base station may transmit the control information including information indicating one of indexes.

[114] FIG. 5 is a diagram illustrating a part of a format of DL assignment DCI as shown in FIG. 3.

[115] Referring to FIG. 5, control information may be DL allocation DL control information (DL allocation DCI) 500. In the step S320 of transmitting the control information to a UE, a base station may transmit the DL allocation DL control information 500 including information indicating one of indexes to the UE through a DL control channel (PDCCH).

[116] Specifically, the DL allocation DL control information 500 illustrated in FIG. 5 may include a field representing information indicating one of indexes, such as a symbol allocation field (SAF) 510.

[117] The SAF field 510 may represent one of indexes included in the time-domain resource configuration information 400 transmitted through the RRC signaling. For example, in case all of the time-domain resource configuration information of the Table 2 is transmitted through high layer signaling, the SAF field 410 may represent, with 4 bits, all of the OFDM

symbol allocation information of the Table 2.

[118] As another example, in case a part of the time-domain resource configuration information of the Table 2, such as indexes 0 to 7, is transmitted through high layer signaling, the SAF field 410 may represent the OFDM symbol allocation information with 3 bits.

[119] In order to allocate the time-domain resource for UL data channel (PUSCH) transmission/reception, time-domain resource configuration information may include, in the form of a table, OFDM symbol (or SC-FDMA symbol) allocation information and indexes indicating each of the symbol allocation information for each UE. The OFDM symbol (or SC-FDMA symbol) allocation information for the UL data channel (PUSCH) transmission/reception may include one or more starting OFDM symbols (or SC-FDMA symbols) and one or more lengths.

[120] In the step S310 of transmitting time-domain resource configuration information to the UE, the base station may transmit, to the UE, time-domain resource configuration information in the form of a table for the UL data channel (PUSCH) transmission/reception through UE-specific high layer signaling.

[121] A symbol allocation candidate table may be formed for all symbols formed of a TTI set for the UE. For example, for an NR UE on which a TTI is set as a unit of a slot formed of 14 symbols based on 15kHz, as described above, a symbol allocation candidate table may be

formed as shown in the Table 2. It is noted that the symbol allocation table may be predefined with a SCS value or a TTI size supported by a corresponding cell, or be configured by a base station through cell-specific/UE-specific RRC signaling.

[122] FIG. 6 shows an information sequence of UE-specific higher layer signaling including time-domain resource configuration information in the form of a table for UL data channel (PUSCH) transmission/reception as in FIG. 3.

[123] In the step S310 of transmitting time-domain resource configuration information to a UE, a base station may transmit, to the UE, time-domain resource configuration information 600 in the form of a table for UL data channel (PUSCH) transmission/reception through UE-specific high layer signaling, such RRC signaling, as shown in FIG. 6.

[124] As described above, the base station may configure PUSCH time-domain resource configuration information in the form of a table as shown in the Table 1 or 2, and transmit the configured information to the UE through the RRC signaling. When configuring PUSCH time-domain resource configuration information in the form of a table as shown in the Table 1 or 2 and transmitting the configured information to the UE through the RRC signaling, the base station may include, in the PUSCH time-domain resource configuration information, i) information area (e.g., information area formed of 3 bits for indicating indexes 0 to 7 in the case of the Table 1, or 4 bits for indicating indexes 0 to 15 in the case of the Table 2) for indicating

each index forming the symbol allocation table and ii) OFDM symbol allocation information corresponding to each index, which is mapped to a specific value. Thus, the base station may transmit the PDSCH time-domain resource configuration information including the information area and the OFDM symbol allocation information mapped to the specific value to the UE through an RRC message (e.g., PUSCH time-domain resource configuration message).

[125] As another example, the base station and the UE may predefine time-domain resource configuration information in the form of a table for PUSCH transmission as shown in the Table 1 or 2, and the base station may transmit table entry information to use for PUSCH symbol allocation for the UE to the UE through RRC signaling. For example, in case PUSCH time-domain resource configuration information in the form of a table as shown in the Table 2 is predefined in a base station and a UE, the base station may transmit entry-related information to use in the UE of the PUSCH time-domain resource configuration information through RRC signaling. That is, the base station may configure index information to use for PUSCH symbol allocation of the UE among indexes 0 to 15 of the Table 2 (e.g., an index value to use or index interval related information to use) and transmit the configured information to the UE through an RRC message (e.g., PUSCH time-domain resource configuration message).

[126] In the step S320 of transmitting control information to the UE, the base station may transmit the control information including information indicating one of indexes.

[127] FIG. 7 is a diagram illustrating a part of a format of UL grant DCI as in FIG. 3.

[128] Referring to FIG. 7, control information may be UL grant DL control information (UL grant DCI) 700. In the step S320 of transmitting the control information to a UE, the base station may transmit the UL grant DL control information 700 including information indicating one of indexes to the UE through a DL control channel (PDCCH).

[129] Specifically, the UL grant DL control information 700 illustrated in FIG. 7 may include a field representing information that indicates one of indexes, such as a symbol allocation field (SAF) 710.

[130] The SAF field 710 may represent one of indexes in the time-domain resource configuration information 400 transmitted through the RRC signaling. For example, in case all of the time-domain resource configuration information of the Table 2 is transmitted through high layer signaling, the SAF field 710 may represent, with 4 bits, all of the OFDM symbol allocation information of the Table 2.

[131] As another example, in case a part of the time-domain resource configuration information of the Table 2, such as indexes 0 to 7, is transmitted through high layer signaling, the SAF field 710 may represent the OFDM symbol allocation information with 3 bits.

[132] FIG. 8 is a flowchart illustrating a method of a base station for allocating a time-domain resource for DL data channel (PDSCH) or UL data channel (PUSCH)

transmission/reception according to another embodiment of the present disclosure.

[133] Referring to FIG. 8, a method 800 of a UE may be provided for allocating a time-domain resource for DL data channel (PDSCH) or UL data channel (PUSCH) transmission/reception in according to another embodiment. For example, the method 800 includes allocating the time-domain resource based on a slot or a mini-slot as a unit of an OFDM symbol and at the same time, receiving S810 time-domain resource configuration information including OFDM symbol allocation information for OFDM symbols used for data channel transmission/reception in the slot or the mini-slot, and receiving S820, from a base station, control information selecting one of symbol allocation information included in the time-domain resource configuration information.

[134] In order to allocate the time-domain resource for the DL data channel (PDSCH) transmission/reception, the time-domain resource configuration information may include, in the form of a table, OFDM symbol allocation information and indexes indicating each of the symbol allocation information for each UE. The OFDM symbol allocation information for the DL data channel (PDSCH) transmission/reception may include starting one or more OFDM symbols and one or more lengths.

[135] In the step S810 of receiving time-domain resource configuration information from the base station, the base station may transmit, to the UE, time-domain resource

configuration information in the form of a table for the DL data channel (PDSCH) transmission/reception through UE-specific high layer signaling.

[136] The UE may receive, from the base station, the time-domain resource configuration information 400 in the form of a table for the DL data channel (PDSCH) transmission/reception through UE-specific high layer signaling, such RRC signaling, as shown in FIG. 4.

[137] The UE may receive, from the base station, PDSCH time-domain resource configuration information in the form of a table as shown in the Table 1 or 2 through the RRC signaling. In case the UE receives PDSCH time-domain resource configuration information in the form of a table as shown in the Table 1 or 2 from a base station, the PDSCH time-domain resource configuration information may include information area (e.g., an information area formed of 3 bits for indicating indexes 0 to 7 in the case of the Table 1, or formed of 4 bits for indicating indexes 0 to 15 in the case of the Table 2) for indicating each index forming the table and also include OFDM symbol allocation information corresponding to each index, which is mapped to a specific value. Thus, the UE may receive the PDSCH time-domain resource configuration information including the information area and the OFDM symbol allocation information mapped to the specific value from the base station through an RRC message (e.g., PDSCH time-domain resource configuration message).

[138] As another example, a base station and a UE may predefine time-domain resource configuration information in the form of a table for PDSCH transmission, as shown in the Table 1 or 2, and the UE may receive table entry-related information to use for PDSCH reception in the UE among the table formed time-domain resource configuration information from the base station through RRC signaling. For example, in case PDSCH time-domain resource configuration information in the form of a table as shown in the Table 2 is predefined in a base station and a UE, the UE may receive entry-related information to use in the UE among the PDSCH time-domain resource configuration information through RRC signaling. That is, index information to use for PUSCH symbol allocation information reception of the UE among indexes 0 to 15 of the Table 2 (e.g., an index value to use or index interval related information to use) may be set, and the UE may receive the configured information from the base station through an RRC message (e.g., PUSCH time-domain resource configuration message).

[139] In the step S820 of receiving control information from the base station, the UE may receive the control information including information indicating one of indexes.

[140] The control information may be DL allocation DL control information 500. In the step S820 of receiving the control information from the base station, the UE may receive the DL allocation DL control information 500 including information indicating one of indexes from the base station through a DL control channel (PDCCH).

[141] Specifically, the DL allocation DL control information 500 shown in FIG. 5 may include a field representing information indicating one of indexes, such as a symbol allocation field (SAF) field 510.

[142] The SAF field 510 may represent one of indexes included in the time-domain resource configuration information 400 transmitted through the high layer signaling.

[143] In order to allocate the time-domain resource for UL data channel (PUSCH) transmission/reception, time-domain resource configuration information may include, in the form of a table, OFDM symbol (or SC-FDMA symbol) allocation information and indexes indicating each of the symbol allocation information for each UE. The OFDM symbol (or SC-FDMA symbol) allocation information for the UL data channel (PUSCH) transmission/reception may include one or more starting OFDM symbols (or SC-FDMA symbols) and one or more lengths.

[144] In the step S810 of receiving time-domain resource configuration information from the base station, the base station may transmit, to the UE, time-domain resource configuration information 600 in the form of a table for the UL data channel (PUSCH) transmission/reception through UE-specific high layer signaling.

[145] The UE may receive, from the base station, PUSCH time-domain resource configuration information in the form of a table as shown in the Table 1 or 2 through the RRC

signaling. In case the UE receives PUSCH time-domain resource configuration information in the form of a table as shown in the Table 1 or 2 from a base station, the PUSCH time-domain resource configuration information may include information area (e.g., information area formed of 3 bits for indicating indexes 0 to 7 in the case of the Table 1, or formed of 4 bits for indicating indexes 0 to 15 in the case of the Table 2) for indicating each index forming the table and also include OFDM symbol allocation information corresponding to each index, which is mapped to a specific value. Thus, the UE may receive the PUSCH time-domain resource configuration information including the information area and the OFDM symbol allocation information mapped to the specific value from the base station through an RRC message (e.g., PUSCH time-domain resource configuration message).

[146] As another example, a base station and a UE may predefine time-domain resource configuration information in the form of a table for PUSCH transmission, as shown in the Table 1 or 2, and the UE may receive table entry-related information to use for PUSCH transmission in the UE among the table formed time-domain resource configuration information from the base station through RRC signaling. For example, in case PUSCH time-domain resource configuration information in the form of a table as shown in the Table 2 is predefined in a base station and a UE, the UE may receive entry-related information to use in the UE among the PUSCH time-domain resource configuration information through RRC signaling. That is,

index information to use for PUSCH symbol allocation information reception of the UE among indexes 0 to 15 of the Table 2 (e.g., an index value to use or index interval related information to use) may be configured, and the UE may receive the configured information from the base station through an RRC message (e.g., PUSCH time-domain resource configuration message).

[147] In the step S810 of receiving control information from the base station, the base station may transmit the control information including information indicating one of indexes to the UE.

[148] The control information may be UL grant DL control information. In the step S810 of receiving the control information from the base station, the base station may transmit the UL grant DL control information including information indicating one of indexes to the UE through a DL Control channel.

[149] Specifically, the UL grant DL control information 700 shown in FIG. 7 may include a field representing information indicating one of indexes, such as a symbol allocation field (SAF) 710. The SAF field 710 may represent one of indexes included in the time-domain resource configuration information transmitted through the high layer signaling.

[150] Fig. 9 is a block diagram illustrating a base station 900 according to embodiments of the present disclosure.

[151] Referring to FIG. 9, a base station 900 according to another embodiment

includes a controller 910, a transmitter 920, and a receiver 930.

[152] The controller 910 is configured to control the overall operations of the base station for configuring symbol allocation information for allocating a data resource in the NR according to the embodiments of the present disclosure described above. The controller 910 is configured to control the overall operations of the base station 900 for allocating a time-domain resource for the DL data channel (PDSCH) or UL data channel (PUSCH) transmission/reception discussed referring to FIGs. 3 to 7.

[153] The transmitter 920 and the receiver 930 respectively are configured to transmit and receive signals, messages, and data necessary for carrying out some embodiments as described above, to and from the UE.

[154] That is, the transmitter 920 and the receiver 930 may be used to transmit/receive signals, messages, and the like required to perform a method of the base station for allocating the time-domain resource for the DL data channel (PDSCH) or UL data channel (PUSCH) transmission/reception discussed referring to FIGs. 3 to 7.

[155] FIG. 10 is a block diagram illustrating a UE according to embodiments of the present disclosure.

[156] Referring to FIG. 10, a UE 1000 according to another embodiment includes a receiver 1010, a controller 1020, and a transmitter 1030.

[157] The receiver 1010 receives DL control information, data, and messages from a base station through a corresponding channel.

[158] The controller 1020 is configured to control the overall operations of the UE 1000 for obtaining symbol allocation information of DL control information in the NR according to the embodiments of the present disclosure described above.

[159] The controller 1010 is configured to control the overall operations of the UE 1000 for allocating a time-domain resource for the DL data channel (PDSCH) or UL data channel (PUSCH) transmission/reception discussed referring to FIGs. 3 to 7.

[160] The transmitter 1030 is configured to transmit UL control information, data, and messages to a base station through a corresponding channel.

[161] That is, the transmitter 1020 and the receiver 1030 may be used to transmit/receive signals, messages, and the like required to perform a method of the base station/UE for allocating the time-domain resource for the DL data channel (PDSCH) or UL data channel (PUSCH) transmission/reception discussed referring to FIGs. 3 to 7.

[162] The standardized specifications or standard documents related to the embodiments described above constitute a part of the present disclosure. Accordingly, it should be construed that the incorporation of the content of the standardized specifications and part of the standard documents into the detailed description and claims is included within the scope of

the present disclosure.

[163] Although a preferred embodiment of the present disclosure has been described for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims. Therefore, exemplary aspects of the present disclosure have not been described for limiting purposes, but to describe the embodiments, the therefore, the scope of the present disclosure shall not be limited to such embodiments. The scope of protection of the present disclosure should be construed based on the following claims, and all technical ideas within the scope of equivalents thereof should be construed as being included within the scope of the present disclosure.

[164] **CROSS-REFERENCE TO RELATED APPLICATION**

[165] If applicable, this application claims priority under 35 U.S.C §119(a) of Patent Application No.10-2016-0143013, filed on October 31, 2016, and Patent Application No.10-2017-0140898, filed on October 27, 2017, in Korea, the entire contents of which are incorporated herein by reference. In addition, this non-provisional application claims priorities in countries other than the U.S. for the same reason based on the Korean Patent Applications, the entire contents of which are hereby incorporated by reference.

【CLAIMS】

1. A method of a base station for allocating a time-domain resource for downlink (DL) data channel (PDSCH) transmission/reception or uplink (UL) data channel (PUSCH) transmission/reception, the method comprising:

allocating the time-domain resource based on a slot or a mini-slot as a unit of an orthogonal frequency-division multiplexing (OFDM) symbol and at the same time, transmitting, to a user equipment, time-domain resource configuration information including OFDM symbol allocation information for OFDM symbols used for the DL data channel (PDSCH) transmission/reception or the UL data channel (PUSCH) transmission/reception in the slot or the mini-slot; and

transmitting, to the user equipment, control information selecting one of the symbol allocation information included in the time-domain resource configuration information.

2. The method according to claim 1, wherein for allocating the time-domain resource for the DL data channel (PDSCH) transmission/reception, the time-domain resource configuration information includes, in the form of a table, the OFDM symbol allocation information and indexes indicating each of the symbol allocation information for each user equipment.

3. The method according to claim 2, wherein the OFDM symbol allocation information for the DL data channel transmission/reception includes one or more starting OFDM symbols and one or more lengths.

4. The method according to claim 2, wherein the transmitting of the time-domain resource configuration information to the user equipment is performed by transmitting the time-domain resource configuration information in the form of the table for the DL data channel (PDSCH) transmission/reception to the user equipment through user equipment-specific high layer signaling.

5. The method according to claim 2, wherein the transmitting of the control information to the user equipment is performed by transmitting the control information including information indicating one of the indexes to the user equipment.

6. The method according to claim 5, wherein the control information is DL assignment DL control information, and

wherein the transmitting of the control information to the user equipment is performed by transmitting the DL assignment DL control information including information indicating one

of the indexes to the user equipment through a DL control channel.

7. The method according to claim 1, wherein for allocating the time-domain resource for the UL data channel (PUSCH) transmission/reception, the time-domain resource configuration information includes, in the form of a table, the OFDM symbol allocation information and indexes indicating each of the symbol allocation information for each user equipment.

8. The method according to claim 7, wherein the OFDM symbol allocation information for the UL data channel (PUSCH) transmission/reception includes one or more starting OFDM symbols and one or more lengths.

9. The method according to claim 7, wherein the transmitting of the time-domain resource configuration information to the user equipment is performed by transmitting the time-domain resource configuration information in the form of the table for the UL data channel (PUSCH) transmission/reception to the user equipment through user equipment-specific high layer signaling.

10. The method according to claim 7, wherein the transmitting of the control information to the user equipment is performed by transmitting the control information including information indicating one of the indexes to the user equipment.

11. The method according to claim 1, wherein the control information is UL grant DL control information, and

wherein the transmitting of the control information to the user equipment is performed by transmitting the UL grant DL control information including information indicating one of the indexes to the user equipment through a DL control channel.

12. A method of a user equipment for allocating a time-domain resource for downlink (DL) data channel (PDSCH) transmission/reception or uplink (UL) data channel (PUSCH) transmission/reception, the method comprising:

allocating the time-domain resource based on a slot or a mini-slot as a unit of an orthogonal frequency division multiplexing (OFDM) symbol and at the same time, receiving, from a base station, time-domain resource configuration information including OFDM symbol allocation information for OFDM symbols used for the DL data channel (PDSCH) transmission/reception or the UL data channel (PUSCH) transmission/reception in the slot or the

mini-slot; and

receiving, from the base station, control information selecting one of the symbol allocation information included in the time-domain resource configuration information.

13. The method according to claim 12, wherein for allocating the time-domain resource for the DL data channel (PDSCH) transmission/reception, the time-domain resource configuration information includes, in the form of a table, the OFDM symbol allocation information and indexes indicating each of the symbol allocation information for each user equipment.

14. The method according to claim 13, wherein the OFDM symbol allocation information for the DL data channel transmission/reception includes one or more starting OFDM symbols and one or more lengths.

15. The method according to claim 13, wherein the receiving of the time-domain resource configuration information from the base station is performed by transmitting the time-domain resource configuration information in the form of the table for the DL data channel (PDSCH) transmission/reception by the base station to the user equipment through user

equipment-specific high layer signaling.

16. The method according to claim 13, wherein the receiving of the control information from the base station is performed by transmitting the control information including information indicating one of the indexes by the base station to the user equipment.

17. The method according to claim 16, wherein the control information is DL assignment DL control information, and

wherein the receiving of the control information from the base station is performed by transmitting the DL assignment DL control information including information indicating one of the indexes by the base station to the user equipment through a DL control channel.

18. The method according to claim 12, wherein for allocating the time-domain resource for the UL data channel (PUSCH) transmission/reception, the time-domain resource configuration information includes, in the form of a table, the OFDM symbol allocation information and indexes indicating each of the symbol allocation information for each user equipment.

19. The method according to claim 18, wherein the OFDM symbol allocation information for the UL data channel (PUSCH) transmission/reception includes one or more starting OFDM symbols and one or more lengths.

20. The method according to claim 18, wherein the receiving of the time-domain resource configuration information from the base station is performed by transmitting the time-domain resource configuration information in the form of the table for the UL data channel (PUSCH) transmission/reception by the base station to the user equipment through user equipment-specific high layer signaling.

21. The method according to claim 18, wherein the receiving of the control information from the base station is performed by transmitting the control information including information indicating one of the indexes by the base station to the user equipment.

22. The method according to claim 12, wherein the control information is UL grant DL control information, and

wherein the receiving of the control information from the base station is performed by transmitting the UL grant DL control information including information indicating one of the

indexes by the base station to the user equipment through a DL control channel.

【ABSTRACT】

Provided is a method for a base station to allocate a time interval resource to transceive a downlink data channel (PDSCH) or an uplink data channel (PUSCH). The method includes allocating a time interval resource for each OFDM symbol on the basis of a slot or a mini-slot, transmitting, to a terminal, time interval resource configuration information including OFDM symbol allocation data for OFDM symbols used for data channel transception in the slot or the mini-slot, and transmitting, to the terminal, control information selecting one of the symbol allocation data included in the time interval resource configuration information.

FIG. 1

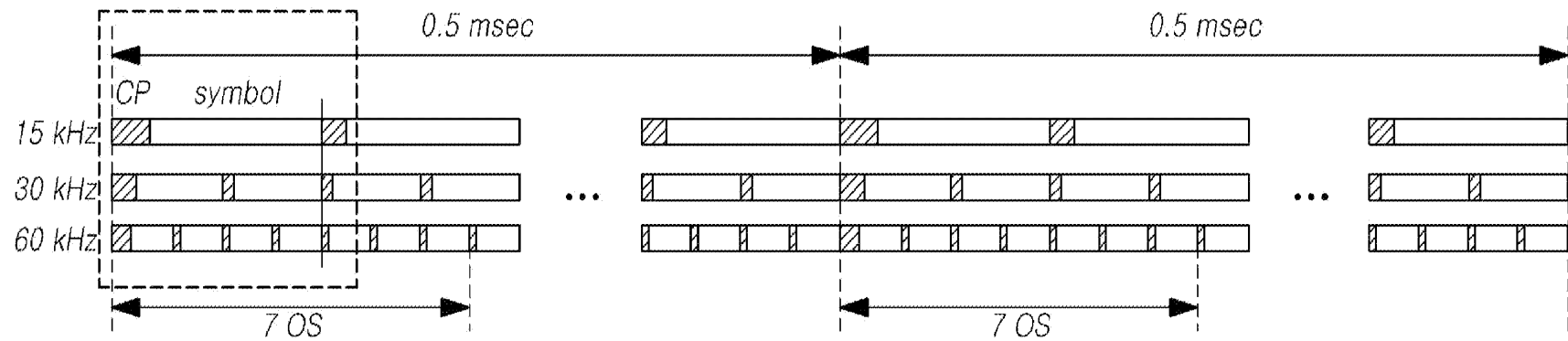


FIG. 2

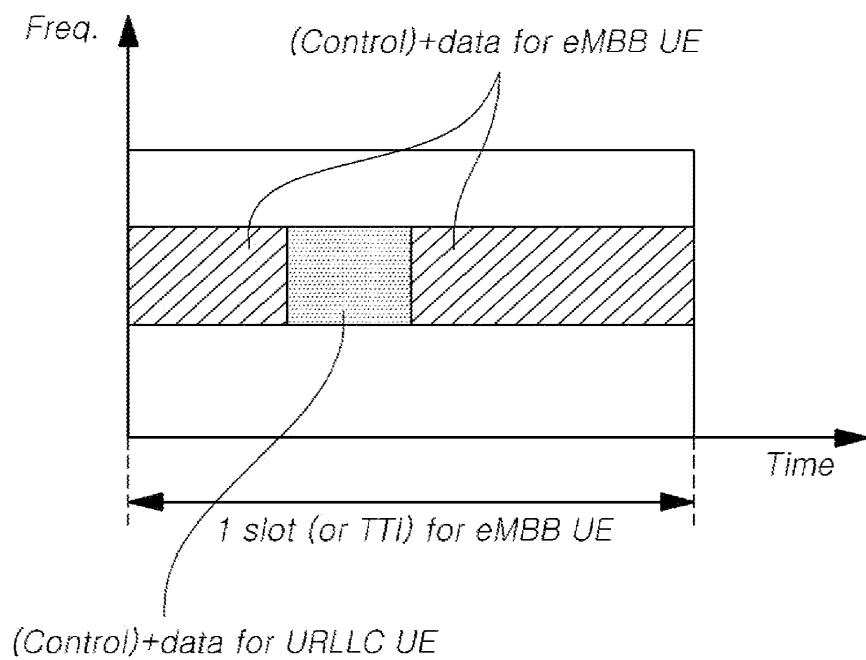


FIG. 3

300

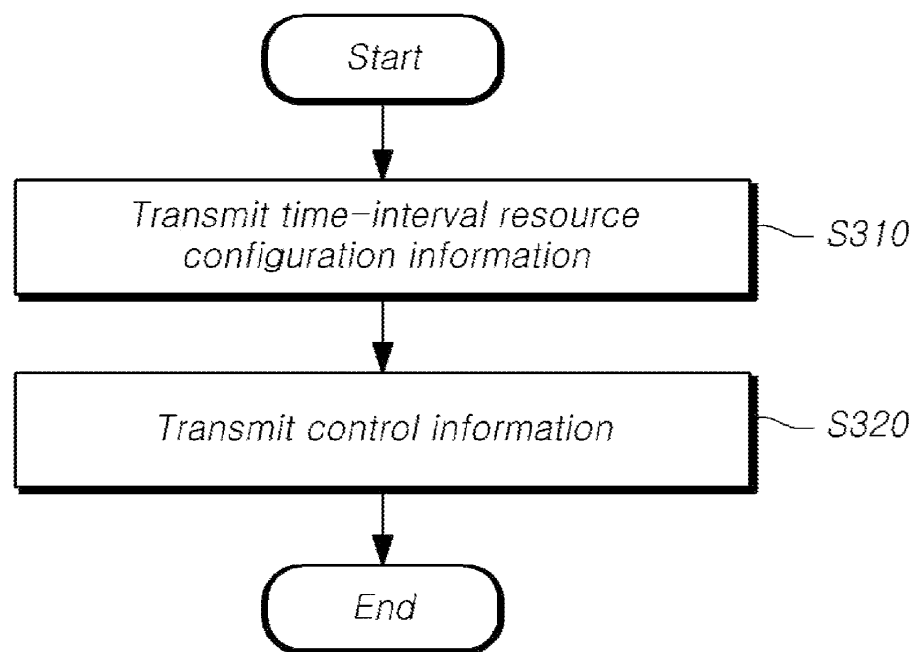


FIG. 4

Time-interval resource configuration information for a PDSCH (400)

```
{  
  {index 0, SOS 0, Length 4}  
  {index 1, SOS 0, Length 5}  
  .  
  .  
  .  
  {index 15, SOS 5, Length 1}  
}
```

FIG. 5

DL assignment DCI(500)

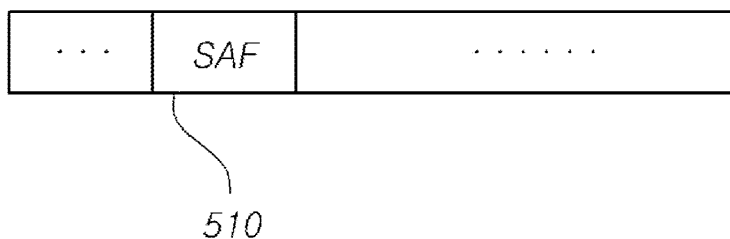


FIG. 6

Time-interval resource configuration information for a PUSCH (600)

```
{  
  {index 0, SOS 0, Length 4}  
  {index 1, SOS 0, Length 5}  
  .  
  .  
  .  
  {index 15, SOS 5, Length 1}  
}
```

FIG. 7

UL grant DCI(700)

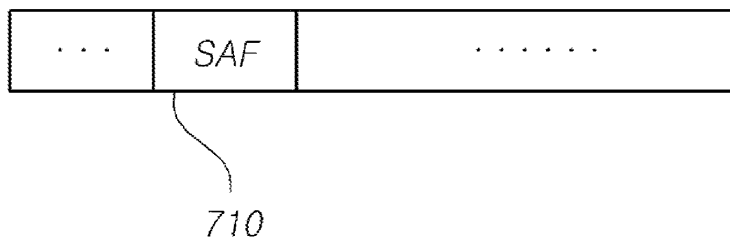


FIG. 8

800

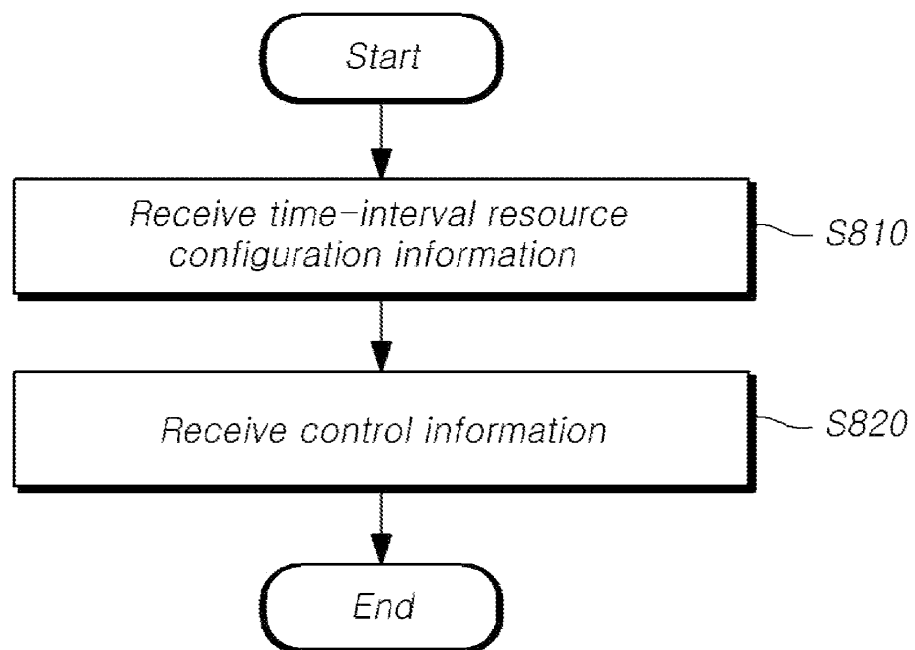


FIG. 9

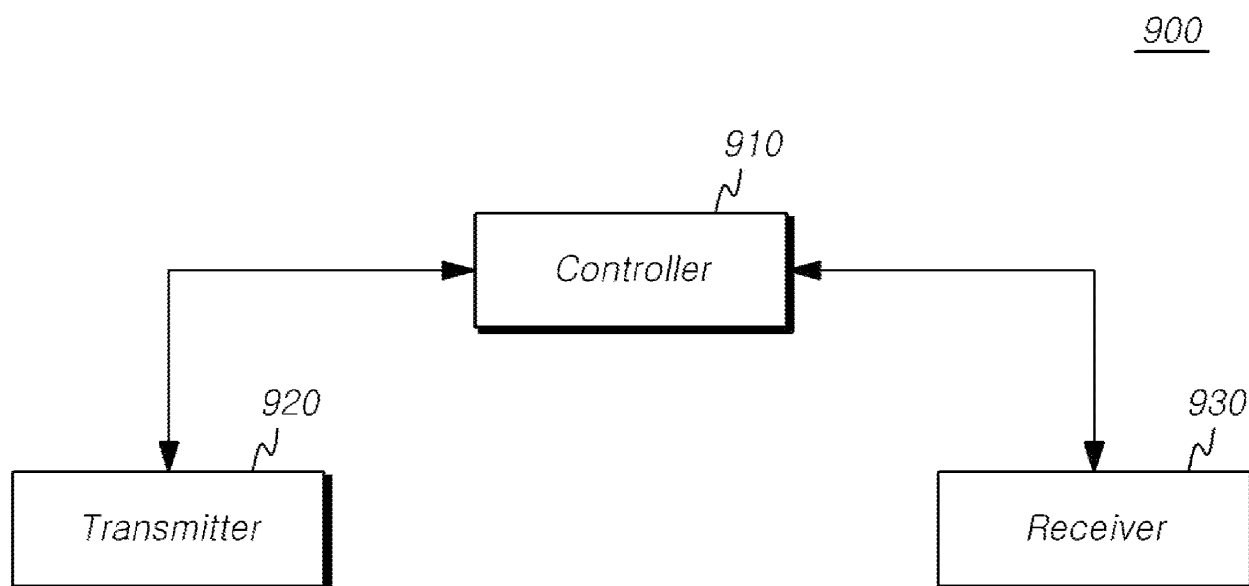
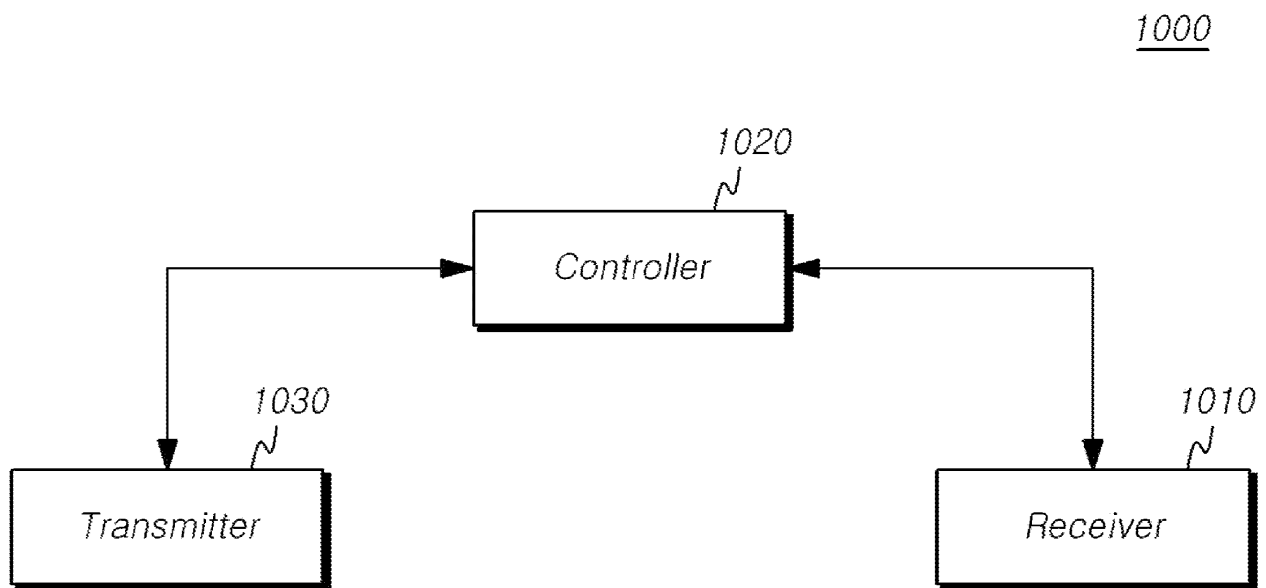


FIG. 10



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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK
--------------------	--

As the below named inventor, I hereby declare that:

This declaration is directed to: ☒ The attached application, or
☒ United States application or PCT international application number PCT/KR2017/012105
filed on October 30, 2017

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

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LEGAL NAME OF INVENTOR

Inventor: PARK, Kyujin

Date (Optional): Mar. 4th 2017

Signature: 

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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK
As the below named inventor, I hereby declare that:	
This declaration is directed to: ☒ The attached application, or	
☒ United States application or PCT international application number <u>PCT/KR2017/012105</u>	
filed on <u>October 30, 2017</u>	
The above-identified application was made or authorized to be made by me.	
I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.	
I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.	
WARNING:	
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LEGAL NAME OF INVENTOR	
Inventor: <u>CHOI, Woo-jin</u>	Date (Optional): <u>MAR 4th 2019</u>
Signature: 	
Note: An application data sheet (PTO/AIA/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use an additional PTO/SB/AIA01 form for each additional inventor.	

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:	Kyujin PARK et al.	Examiner: Not yet assigned
Application No.:	Not yet assigned	Group Art Unit: Not yet assigned
Filing Date:	Herewith	Confirmation No.: Not yet assigned
For:	METHOD AND DEVICE FOR ALLOCATING DATA CHANNEL RESOURCE FOR NEXT-GENERATION WIRELESS ACCESS NETWORK	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT

Before examination of the above-identified application, please amend the application as follows:

Amendments to the Specification begin on page 2.

Amendments to the Claims begin on page 3.

Remarks begin on page 8.

AMENDMENT TO THE SPECIFICATION

Please INSERT the following header and paragraph immediately following the title of the invention:

[CROSS-REFERENCE TO RELATED APPLICATIONS]

This application is a continuation of U.S. Application No. 16/346,108, filed on April 29, 2019, which is a National Stage Patent Application of PCT International Patent Application No. PCT/KR2017/012105, filed on October 30, 2017 under 35 U.S.C. §371, which claims priorities to Korean Patent Application Nos. 10-2016-0143013, filed on October 31, 2016 and 10-2017-0140898, filed on October 27, 2017, the teachings of which are incorporated herein in their entireties by reference.

AMENDMENT TO THE CLAIMS

1-22. (Canceled)

23. (New) A base station, comprising:

a transceiver;

a receiver; and

a controller which controls the transceiver and receiver thereby performing operations including:

transmitting, to a wireless device, a radio resource control (RRC) signal including information on one or more allocations of a time-domain resource,

wherein the time-domain resource includes at least one or more orthogonal frequency-division multiplexing (OFDM) symbols,

wherein, based on the information, a number of OFDM symbols are determined for a physical downlink shared channel (PDSCH) or a physical uplink shared channel (PUSCH), and

wherein the determined number of OFDM symbols is smaller than or equal to a number of OFDM symbols included in a slot; and

transmitting, to the wireless device, downlink control information (DCI), including a field including a bit string,

wherein the bit string in the field relates to a row index of an allocation table, and

wherein the allocation table includes information on a starting OFDM symbol and the number of the OFDM symbols which is smaller than or equal to the number of OFDM symbols included in the slot.

24. (New) The base station of claim 23, wherein the bit string is 3 bits in length.

25. (New) The base station of claim 23, wherein the DCI further includes information on one or more allocations of a frequency-domain resource.

26. (New) The base station of claim 23, wherein the base station supports a new radio access technology (NR).

27. (New) The base station of claim 23, wherein the base station supports different numerologies which are defined by a subcarrier spacing (SCS).

28. (New) The base station of claim 23, wherein the operations further include:
transmitting, to the wireless device, downlink data via the PDSCH; and
receiving, from the wireless device, uplink data via the PUSCH.

29. (New) The base station of claim 23, wherein the number of the OFDM symbols is a maximum of 14.

30. (New) A wireless device, comprising:
a transceiver;
a receiver; and
a controller which controls the transceiver and receiver thereby performing operations including:

receiving, from a base station, a radio resource control (RRC) signal including information on one or more allocations of a time-domain resource,

wherein the time-domain resource includes at least one or more orthogonal frequency-division multiplexing (OFDM) symbols,

wherein, based on the information, a number of OFDM symbols are determined for a physical downlink shared channel (PDSCH) or a physical uplink shared channel (PUSCH), and

wherein the determined number of OFDM symbols is smaller than or equal to a number of OFDM symbols included in a slot; and

receiving, from the base station, downlink control information (DCI), including a field including a bit string,

wherein the bit string in the field relates to a row index of an allocation table, and

wherein the allocation table includes information on a starting OFDM symbol and the number of the OFDM symbols which is smaller than or equal to the number of OFDM symbols included in the slot.

31. (New) The wireless device of claim 30, wherein the bit string is 3 bits in length.

32. (New) The wireless device of claim 30, wherein the DCI further includes information on one or more allocations of a frequency-domain resource.

33. (New) The wireless device of claim 30, wherein the wireless device supports a new radio access technology (NR).

34. (New) The wireless device of claim 30, wherein the wireless device supports different numerologies which are defined by a subcarrier spacing (SCS).

35. (New) The wireless device of claim 30, wherein the operations further include:
receiving, from the base station, downlink data via the PDSCH; and
transmitting, to the base station, uplink data via the PUSCH.

36. (New) The wireless device of claim 30, wherein the number of the OFDM symbols is a maximum of 14.

37. (New) An operation method of wireless device, comprising:
receiving, from a base station, a radio resource control (RRC) signal including information on one or more allocations of a time-domain resource,
wherein the time-domain resource includes at least one or more orthogonal frequency-division multiplexing (OFDM) symbols,
wherein, based on the information, a number of OFDM symbols are determined for a physical downlink shared channel (PDSCH) or a physical uplink shared channel (PUSCH), and
wherein the determined number of OFDM symbols is smaller than or equal to a number of OFDM symbols included in a slot; and
receiving, from the base station, downlink control information (DCI), including a field including a bit string,
wherein the bit string in the field relates to a row index of an allocation table, and
wherein the allocation table includes information on a starting OFDM symbol and the number of the OFDM symbols which is smaller than or equal to the number of OFDM symbols included in the slot.

38. (New) The method of claim 37, wherein the bit string is 3 bits in length.

39. (New) The method of claim 37, wherein the DCI further includes information on one or more allocations of a frequency-domain resource.

40. (New) The method of claim 37, wherein the wireless device supports a new radio access technology (NR).

41. (New) The method of claim 40, wherein the wireless device supports different numerologies which are defined by a subcarrier spacing (SCS).

42. (New) The method of claim 40, further comprising:
receiving, from the base station, downlink data via the PDSCH; and
transmitting, to the base station, uplink data via the PUSCH.

REMARKS

This preliminary amendment is submitted with an associated application filed concurrently herewith. The foregoing amendment contain no new matter. Applicant respectfully requests entry of this amendment prior to examination of the application, and early favorable action thereon. Early and favorable consideration on the merits is earnestly and respectfully requested.

No additional fees are believed to be necessitated by this response. If any other fees are determined to be due with this filing, the Director is authorized to charge any such fees, or credit any overpayment, to our Deposit Account No. 602040, referencing the Docket No. stated above.

Respectfully Submitted,

Date: February 9, 2021

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