**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

K.MIZRA LLC,	)	
	)	
Plaintiff,	)	
	)	
v.	)	Case No. 2:21-cv-00241-JRG
	)	
AT&T CORP., AT&T COMMUNICATIONS LLC, AT&T MOBILITY, AT&T MOBILITY II LLC and AT&T SERVICES INC.,	)))	(Lead Case)
	)	
Defendants,	)	
	)	
ERICSSON INC.,	)	
	)	
Intervenor-Defendant.	)	
	)	
K.MIZRA LLC,	)	
	)	
Plaintiff,	)	
	)	
v.	)	Case No. 2:21-cv-00242-JRG
	)	
T-MOBILE US, INC., T-MOBILE USA, INC., and SPRINT CORP.,	))	(Member Case)
	)	
Defendants,	)	
	)	
ERICSSON INC.,	)	
	)	
Intervenor-Defendant.	)	
	)	
K.MIZRA LLC,	)	
	)	
Plaintiff,	)	
	)	
v.	)	Case No. 2:21-cv-00243-JRG
	)	
CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS, VERIZON CORPORATE SERVICES GROUP INC., and VERIZON ONLINE LLC,	))))	(Member Case)
	)	
Defendants.	)	

FIRST AMENDED COMPLAINT

Plaintiff K.Mizra LLC ("K.Mizra") files this Complaint against Defendants T-Mobile US, Inc., T-Mobile USA, Inc., and Sprint Corp. (collectively, "T-Mobile") and Ericsson Inc. ("Ericsson").[1]

NATURE OF THE CASE

1.   This is an action for the infringement of United States Patent No. 8,958,819 (the "`819 Patent" or "the Patent-in-Suit").

2.   T-Mobile has been infringing the `819 Patent in violation of 35 U.S.C. § 271 by using mobile location servers in its cellular telecommunications networks.

3.   Intervenor Ericsson has been infringing the '819 Patent in violation of 35 U.S.C. § 271 by deploying, operating, maintaining, testing, and using its location servers and software in T-Mobile's cellular telecommunications networks.

4.   Plaintiff K.Mizra seeks appropriate damages and prejudgment and post-judgment interest for T-Mobile's infringement of the Patent-in-Suit.

THE PARTIES

5.   Plaintiff K.Mizra is a Delaware limited liability corporation with its principal place of business at 77 Brickell Avenue, #500-96031, Miami, FL 33131. K.Mizra is the assignee and owner of the Patent-in-Suit.

6.   Defendant T-Mobile US, Inc. is a Delaware corporation with its principal place of business at 12920 SE 38th Street, Bellevue, WA 98006.

7.   Defendant T-Mobile USA, Inc. is a Delaware corporation with its principal place

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[1] On February 25, 2022, the Court granted Ericsson's Unopposed Motion to Intervene as a Defendant (Dkt. No. 44) in this case pursuant to Rule 24(a) or, in the alternative, Rule 24(b). *See* Dkt. No. 65.

of business at 12920 SE 38th Street, Bellevue, WA 98006. On information and belief, T-Mobile

USA, Inc. is a wholly owned subsidiary of T-Mobile US, Inc.

8.   Defendant Sprint Corp. is a Delaware corporation with its principal place of

business at 6200 Sprint Parkway, Overland Park, KS 66251. On information and belief, Sprint

Corp. is a wholly owned subsidiary of T-Mobile US, Inc.

9.   On information and belief, T-Mobile's operations in the Eastern District of Texas

are substantial and varied.

10.   T-Mobile operates one or more wireless telecommunications networks to provide

wireless telecommunications services, including within the Eastern District of Texas, under brand

names including "T-Mobile."

11.   T-Mobile advertises that its 4G LTE and 5G Nationwide networks are available

within the Eastern District of Texas. *See Coverage Check*, T-MOBILE, https://www.t-

mobile.com/coverage/coverage-map (last visited May 12, 2021).

12.   T-Mobile maintains multiple facilities in the Eastern District of Texas, including at

least T-Mobile retail stores located at 900 E. East Blvd N #100B, Marshall, TX 75670; and 1806

E. End Blvd. Ste. 100, Marshall, TX 75670. *See T-Mobile Store Locator*, T-MOBILE, http://t-

mobile.com/store-locator (last visited Mar. 31, 2021).

13.   On information and belief, T-Mobile USA, Inc. also maintains and operates

research and development facilities at 7668 Warren Parkway, Frisco, TX 75034.

14.   In other recent actions, T-Mobile has either admitted or not contested that this

federal judicial district is a proper venue for patent infringement actions against it. *See, e.g.,*

Answer to First Amended Complaint, at 2-3, ¶¶ 7-10, *Fractus, S.A. v. AT&T Mobility LLC et al.*,

No. 2:18-cv-00135-JRG (E.D. Tex. Dec. 13, 2018); Answer at 2, ¶¶ 4, 5, *Preferential Networks*

IP, LLC v. T-Mobile US, Inc. et al., No. 2:17-cv-00626 (E.D. Tex. Nov. 01, 2017), ECF No. 17; Answer ¶¶ 4, 5, *Traxcell Techs., LLC v. T-Mobile, USA, Inc.*, No. 2:17-cv-00720 (E.D. Tex. Jan. 23, 2018), ECF No. 8; Answer ¶¶ 5, 6, *Kevique Tech., LLC v. T-Mobile USA, Inc.*, No. 2:17-cv-00095 (E.D. Tex. Apr. 11, 2017), ECF No. 10. Defendant T-Mobile USA, Inc. has also admitted or failed to contest that it has transacted business in this district. *See Preferential Networks* at Answer at 2, ¶ 4; *Traxcell Techs.* at Answer ¶ 2; *Kevique Tech.* at Answer ¶¶ 5, 6. *See also Answer ¶¶ 19, 20, Mobile Synergy Sols., LLC v. T-Mobile US, Inc. et al.,* No. 6:16-cv-01223 (E.D. Tex. Feb. 13, 2017), ECF No. 47.

15.   By registering to conduct business in Texas and by maintaining facilities in at least the cities of Marshall and Frisco, T-Mobile has multiple regular and established places of business within the Eastern District of Texas.

16.   Ericsson Inc. is a Delaware corporation with its principal place of business at 6300 Legacy Drive, Plano, Texas 75024.

17.   Ericsson Inc. maintains a significant physical presence in this judicial district. Ericsson Inc.'s headquarters is located at 6300 Legacy Drive, Plano, Texas 75024, which is within this judicial district. On information and belief, Ericsson Inc. is wholly-owned and controlled by Telefonaktiebolaget LM Ericsson and acts as the agent for Telefonaktiebolaget LM Ericsson in making sales, servicing equipment, and otherwise carrying out the operations of Telefonaktiebolaget LM Ericsson in North America. Telefonaktiebolaget LM Ericsson and/or its affiliates manufacture wireless telecommunications equipment and then arrange with Ericsson Inc. to import those products into the United States for installation in T-Mobile's network. Upon information and belief, representatives of Telefonaktiebolaget LM Ericsson regularly visit this district in their supervisory capacity over Ericsson Inc. At all times relevant hereto, Ericsson Inc.

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was acting as the agent of Telefonaktiebolaget LM Ericsson.

<center>**JURISDICTION AND VENUE**</center>

18.   This is an action for patent infringement arising under the Patent Laws of the United States, Title 35 of the United States Code.

19.   This Court has original subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).

20.   This Court has personal jurisdiction over T-Mobile because, *inter alia*, T-Mobile has a continuous presence in, and systematic contact with, this District and has registered to conduct business in the state of Texas.

21.   T-Mobile has committed and continues to commit acts of infringement of K.Mizra's Patent-in-Suit in violation of the United States Patent Laws, and has used infringing products within this District. T-Mobile's infringement has caused substantial injury to K.Mizra, including within this District.

22.   Ericsson has committed and continues to commit acts of infringement of K.Mizra's Patent-in-Suit in violation of the United States Patent Laws, and has used and sold infringing products within this District. Ericsson's infringement has caused substantial injury to K.Mizra, including within this District. K.Mizra's right to relief against T-Mobile and Ericsson for their infringement of the Patent-in-Suit arises out of the same series of transactions or occurrences, namely their cooperation in planning, developing, testing, operating, and maintaining T-Mobile's LTE and 5G networks. No claim is made in this complaint against Ericsson in relation to products or services sold to other wireless carriers.

23.   Venue is proper in this District pursuant to 28 U.S.C. §§ 1400 and 1391 because T-Mobile and Ericsson have committed acts of infringement in this District and maintain regular

<center>4</center>

and established places of business in this District.

THE '819 PATENT-IN-SUIT

24.   The `819 Patent is titled "Femto-Assisted Location Estimation in Macro-Femto Heterogeneous Networks" and was issued by the United States Patent Office to inventors Ke-Ting Lee, Po-Hsuan Tseng, Chien-Hua Chen, and Kai-Ten Feng.

25.   The '819 Patent issued on February 17, 2015. The earliest application related to the '819 Patent was filed on December 11, 2012. A true and correct copy of the '819 Patent is attached as Exhibit A.

26.   K.Mizra is the owner of all right, title and interest in and to the '819 Patent with the full and exclusive right to bring suit to enforce the '819 Patent.

27.   The '819 Patent is valid and enforceable under the United States Patent Laws.

28.   The '819 Patent's invention offers technological solutions that address specific challenges grounded in mobile device location technology. The '819 Patent is directed to methods for locating mobile devices in heterogenous cellular telecommunications networks such as a Long Term Evolution (LTE) network comprising macro base stations and femto base stations. The location of a mobile phone device is of great importance to enabling various location-based services such as navigation and Enhanced 911 (E911) for emergency services. *See* '819 Patent at 1:20-55. Thus, mobile devices are regularly equipped with global positioning system (GPS) receivers to assist in the locating the device. *Id*. In outdoor and line-of-sight (LOS) environments, GPS systems can determine the position of the mobile device with relatively accurate precision. *Id*. However, GPS systems are unable to locate the position of mobile devices with such accuracy in non-line-of sight (NLOS) environments such as inside buildings or environments with heavy obstruction by tall structures surrounding the devices. *Id*.

29.   With the advent of Long Term Evolution Advanced (LTE-A) cellular telecommunications systems to meet the growing demand of high data rates and internet usage on mobile devices, those systems also faced similar challenges with indoor environments and areas with heavy obstructions. *Id*. To mitigate wireless connectivity issues in such environments, LTE-A networks with macro base stations were augmented with femto base stations to provide increased network coverage for mobile devices. *Id*. These heterogenous networks that comprised both macro base stations and femto base stations achieved far better network coverage indoors than networks with only macro base stations.

30.   The inventors of the '819 Patent believed that heterogenous networks could be leveraged to overcome the limitations of GPS systems for mobile devices in indoor or obstructed environments. *Id*. For example, the patent explained that the "development of mBS/fBS HetNet architectures can benefit many applications, such as LBS in indoor environments." *Id*. By incorporating both macro base stations and femto base stations in calculating the position of a mobile device, the `819 Patent achieves improved accuracy of the mobile device location compared to mobile positioning technology such as 2G/3G homogenous cellular networks. *Id*. at 5:3-15.

31.   In homogenous networks, macro base stations may be able to determine the position of the mobile device with a fair amount of accuracy, but those also suffer from similar limitations as with GPS systems in indoor or obstructed environments due to poor network coverage. *Id*. at 5:15-33. The `819 Patent overcomes those limitations with assistance from femto base stations, which "can offer more precise range information compared to mBS [macro base stations] because they can suffer from less attenuation of transmitted signals where there is less interfering materials between the fBS [femto base stations] and the UE [mobile devices] as compared to between a

[macro base station] and the [mobile device]." *Id*.

32.   The inventors of the `819 Patent further enhanced the precision of locating mobile devices in a heterogenous network by applying particle filtering techniques with the information relating to the mobile device, the macro base stations, and femto base stations. *See, e.g.*, *id*. at 5:34-67, 6:46-62, 12:51-13:25, 19:18-21:3. By implementing the particle filter, the `819 Patent overcomes further uncertainties related to, for example, the statistical distribution of the mobile device's position data as well as femto base station position data, thereby improving the accuracy for locating the mobile device. *Id*.

33.   Thus, the inventions of the `819 Patent solve technological problems with non-abstract, technological solutions that improve the performance of mobile device location systems in cellular telecommunication networks. The claims of the `819 Patent recite methods that are not merely the routine or conventional use of generic computers, nor can they be performed by a human. Rather, the claims of the `819 Patent are directed to particularized implementations of cellular telecommunication network equipment and operating software.

FIRST CAUSE OF ACTION
(PATENT INFRINGEMENT BY T-MOBILE
UNDER 35 U.S.C. § 271 OF THE `819 PATENT)

34.   K.Mizra re-alleges and incorporates by reference all of the foregoing paragraphs.

35.   On information and belief, T-Mobile owns, deploys, operates, maintains, tests, and uses the T-Mobile LTE and 5G Networks which include location servers that perform mobile location service and positioning functionality as a part of its wireless communication services. T-Mobile's mobile location services infrastructure is instrumental in pinpointing a mobile user's location for the provision of a myriad of location-based services ("LBS") such as E911, location-based mobile applications, proximity-based marketing, roadside assistance, and the like. Both

providers of these services and T-Mobile's mobile customers critically rely on T-Mobile's infrastructure for accurately locating mobile phones.

36.   T-Mobile's mobile location services infrastructure incorporates and/or utilizes location server equipment and operating software such as T-Mobile's Enhanced Serving Mobile Location Center ("E-SMLC"), Serving Mobile Location Centers ("SMLC"), Secure User Plane Location Platform ("SLP"), and Location Management Function ("LMF"). These mobile location servers communicate with reachable base stations in the T-Mobile network, each of which are typically referred to as an eNodeB or eNB in T-Mobile's 4G LTE network or ng-eNB or gNB in T-Mobile's 5G network. Moreover, such 4G and 5G base stations and femto base stations perform eNB or gNB functionality according to the 3GPP Standards.

37.   On information and belief, T-Mobile has infringed and continues to infringe, either literally or under the doctrine of equivalents, one or more claims, including at least claim 30 of the `819 Patent in violation of 35 U.S.C. §§ 271 et seq. by determining location information of mobile devices on its cellular network through the utilization of its location server equipment and software that operate in accordance with its mobile positioning algorithms including certain aspects of cellular industry standards promulgated by the 3rd Generation Partnership Project (3GPP) and Open Mobile Alliance (OMA). Those standards include, for example, 3GPP TS 23.271 Release 16 ("TS 23.271"); UserPlane Location Protocol, Approved Version 2.0.4, Open Mobile Alliance ("OMA SUPL Specification"); 3GPP TS 38.305 Release 15 ("TS 38.305"); 3GPP TS 36.305 Release 16 ("TS 36.305"); 3GPP TS 36.455 Release 16 ("TS 36.455"); 3GPP TS 37.355 Release 16 ("TS 37.355"); and 3GPP TS 23.071 Release 16 ("TS 23.071").

38.   For example, claim 30 of the `819 Patent recites the following:

A method comprising:

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[A] receiving femto base station timing information related to a user equipment;

[B] receiving macro base station timing information related to the user equipment;

[C] receiving particle information for a first set of particles corresponding to possible user equipment locations;

[D] receiving femto base station position information; and

[E] determining user equipment location information based on a first particle filtering for particle filtering the first set of particles based on the base station information.

39.   On information and belief, and based on publicly available information, T-Mobile's location servers and related services satisfy each and every limitation of at least claim 30 of the `819 Patent by utilizing its E-SMLCs, SMLCs, SLPs, and/or LMF for the provision of its mobile location services. For example, T-Mobile is and has been an active member of the Open Mobile Alliance (OMA) for more than a decade and uses equipment that implements a number of OMA standards including the OMA SUPL Specification. *See* http://omaspecworks.org/membership/current-members/ (last visited May 12, 2021). T-Mobile implements the OMA SUPL Specification in the provision of location services such as the T-Mobile FamilyWhere service. *See* https://www.t-mobile.com/support/plans-features/t-mobile-familywhere-app (last visited May 12, 2021). T-Mobile discloses that "With T-Mobile FamilyWhere® a T-Mobile primary account holder can use the FamilyWhere Android app or the My T-Mobile website to locate any phone on their plan that is on the T-Mobile network." *Id.*

40.   According to the 3GPP Standard, the E-SMLC is responsible for calculating the final location and velocity estimate of the mobile device attached to the E-UTRAN (Evolved UMTS Terrestrial Radio Access Network). *See, e.g.*, TS 23.271 § 6.3.14. Similarly, the 3GPP Standard describes the LMF as the network element responsible for different location services for

mobile devices, including positioning of the devices. *See, e.g.*, TS 38.305 § 5.1.

41.   T-Mobile's mobile location services meet all the requirements of limitation A of claim 30. Limitation A requires the step of "receiving femto base station timing information related to a user equipment." On information and belief, T-Mobile's location servers determine location information of mobile devices by relying in part on femto base station timing information related to mobile devices in communication with femtocells in the T-Mobile network. For example, T-Mobile provides FemtoCell service to its subscribers. *See, e.g.,* https://www.t-mobile.com/support/coverage/4g-lte-cellspot (last visited May 12, 2021); https://www.t-mobile.com/support/coverage/wi-fi-cellspot-router-setup-andamp-help (May 12, 2021). FemtoCells provided by T-Mobile to its subscribers include the Nokia SS2FII and the Alcatel Lucent 9961. *See* https://community.t-mobile.com/other-devices-11/cellspot-v2-update-email-how-14127 (last visited May 12, 2021) and https://www.reddit.com/r/tmobile/comments/7wmhxf/question_about_the_tmobile_4g_lte_cellspot_v1/ (last visited May 12, 2021). By way of further non-limiting example, T-Mobile's E-SMLCs communicate with reachable base stations, which include femto base stations to obtain base station timing information related to a mobile device. *See, e.g.*, TS 36.305 § 5.2; *see also, e.g.*, TS 36.455 §§ 7, 9. Therefore, T-Mobile's mobile location services meet limitation A of claim 30.

42.   T-Mobile's mobile location services also meet all the requirements of limitation B of claim 30. Limitation B requires the step of "receiving macro base station timing information related to the user equipment." As discussed above, T-Mobile's E-SMLCs communicate with reachable base stations, which also include macro base stations to obtain base station timing information related to a mobile device. *See, e.g.*, TS 36.305 § 5.2; *see also, e.g.*, TS 36.455 §§ 7, 9. As such, T-Mobile's mobile location services meet limitation B of claim 30.

43.   T-Mobile's mobile location services also meet all the requirements of limitation C of claim 30. Limitation C requires the step of "receiving particle information for a first set of particles corresponding to possible user equipment locations." On information and belief, T-Mobile's location server receives particle information for a set of particles corresponding to possible locations of a mobile device. By way of non-limiting example, T-Mobile's location servers such as its E-SMLCs receive possible locations corresponding to a mobile device as reported by the mobile device to the location server in the *ProvideLocationInformation* message body shown below. *See, e.g.*, TS 37.355 § 6. Therefore, T-Mobile's mobile locations services meet limitation C of claim 30.

```
ASN1START

ProvideLocationInformation ::= SEQUENCE {
    criticalExtensions      CHOICE {
        c1                      CHOICE {
            provideLocationInformation-r9   ProvideLocationInformation-r9-IEs,
            spare3 NULL, spare2 NULL, spare1 NULL
        },
        criticalExtensionsFuture    SEQUENCE {}
    }
}

ProvideLocationInformation-r9-IEs ::= SEQUENCE {
    commonIEsProvideLocationInformation
                                CommonIEsProvideLocationInformation OPTIONAL,
    a-gnss-ProvideLocationInformation   A-GNSS-ProvideLocationInformation    OPTIONAL,
    otdoa-ProvideLocationInformation    OTDOA-ProvideLocationInformation     OPTIONAL,
    ecid-ProvideLocationInformation     ECID-ProvideLocationInformation      OPTIONAL,
    epdu-ProvideLocationInformation     EPDU-Sequence                        OPTIONAL,
    ...,
    [[
    sensor-ProvideLocationInformation-r13
                                Sensor-ProvideLocationInformation-r13
                                                                     OPTIONAL,
    tbs-ProvideLocationInformation-r13   TBS-ProvideLocationInformation-r13   OPTIONAL,
    wlan-ProvideLocationInformation-r13 WLAN-ProvideLocationInformation-r13 OPTIONAL,
    bt-ProvideLocationInformation-r13    BT-ProvideLocationInformation-r13    OPTIONAL
    ]],
    [[  nr-ECID-ProvideLocationInformation-r16
                                NR-ECID-ProvideLocationInformation-r16      OPTIONAL,
        nr-Multi-RTT-ProvideLocationInformation-r16
                                NR-Multi-RTT-ProvideLocationInformation-r16 OPTIONAL,
        nr-DL-AoD-ProvideLocationInformation-r16
                                NR-DL-AoD-ProvideLocationInformation-r16    OPTIONAL,
        nr-DL-TDOA-ProvideLocationInformation-r16
                                NR-DL-TDOA-ProvideLocationInformation-r16   OPTIONAL
    ]]
}

-- ASN1STOP
```

44.   T-Mobile's mobile location services meet all the requirements of limitation D of

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claim 30. Limitation D requires the step of "receiving femto base station position information." On information and belief, T-Mobile's location servers receive a reachable femto base station's position information from the femto base station. For example, the E-SMLC communicates with reachable eNodeB base stations including femto base stations to obtain their location information. *See, e.g.*, TS 36.455 §§ 7, 8.2, 9.2; *see also, e.g.*, TS 36.305 § 5.2.

45.   By way of further non-limiting example, a location server such as an E-SMLC may also receive position information of an eNodeB including femtocells from a T-Mobile database or data source containing known positions of eNodeBs. T-Mobile's femto base stations, for example, are also equipped with GPS receivers for reporting their position information to the location server. *See* https://www.t-mobile.com/support/public-files/images/support-non-device/4G%20LTE%20CellSpot%20Quick%20Start%20Guide.pdf (last visited May 12, 2021). Therefore, T-Mobile's mobile location services meet limitation D of claim 30.

46.   T-Mobile's mobile location services also meet all the requirements of limitation E of claim 30. Limitation E requires the step of "determining user equipment location information based on a first particle filtering for particle filtering the first set of particles based on the base station information." On information and belief, T-Mobile's location server determines a mobile device's location based on a first particle filtering of the first set of particles based on the base station information that the location server received. For example, the location estimates of a fixed position mobile device involve a spread of estimates around the actual mobile device position, having a statistical distribution. On information and belief, as estimated location samples or particles corresponding to mobile device location are continuously accumulated by T-Mobile's location server over time, the particles are filtered for determining the location of the mobile device. Thus, T-Mobile's mobile location services meet limitation E of claim 30.

47.   On information and belief, T-Mobile's mobile location server equipment receives

and stores computer-executable instructions that in response to execution causes a computing

device including a processor to perform operations as recited in the method of claim 30 as

described at paragraphs 39-46 above.

48.   Accordingly, on information and belief, T-Mobile's mobile location services meet

all the limitations of, and therefore infringe, at least claim 30 of the `819 Patent.

49.   T-Mobile has notice that it infringes at least claim 30 of the `819 Patent at least as

of the service of this complaint. T-Mobile continues to infringe the `819 Patent based on the actions

detailed above.

50.   As a result of T-Mobile's infringement of the `819 Patent, K.Mizra has suffered

and continues to suffer substantial injury and is entitled to recover all damages caused by T-

Mobile's infringement to the fullest extent permitted by the Patent Act, together with prejudgment

interest and costs for T-Mobile's wrongful conduct.

SECOND CAUSE OF ACTION
(PATENT INFRINGEMENT BY ERICSSON
UNDER 35 U.S.C. § 271 OF THE `819 PATENT)

51.   K.Mizra re-alleges and incorporates by reference all of the foregoing paragraphs.

52.   On information and belief, Ericsson deploys, operates, maintains, tests, and uses its

location servers and software that perform mobile location service and positioning functionality in

T-Mobile's cellular networks. Ericsson's mobile location services infrastructure is instrumental in

pinpointing a mobile user's location for the provision of a myriad of location-based services

("LBS") such as E911, location-based mobile applications, proximity-based marketing, roadside

assistance, and the like. Both providers of these services and T-Mobile's mobile customers

critically rely on Ericsson's location server equipment and software for accurately locating mobile

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phones.

53.   Ericsson's mobile location services infrastructure deployed in T-Mobile's networks incorporates and/or utilizes location server equipment and operating software such as Ericsson's Enhanced Serving Mobile Location Center ("E-SMLC"), Serving Mobile Location Centers ("SMLC"), Secure User Plane Location Platform ("SLP"), and Location Management Function ("LMF"). These mobile location servers and software communicate with reachable base stations in the T-Mobile network, each of which are typically referred to as an eNodeB or eNB in T-Mobile's 4G LTE network or ng-eNB or gNB in T-Mobile's 5G network. Moreover, such 4G and 5G base stations and femto base stations perform eNB or gNB functionality according to the 3GPP Standards.

54.   On information and belief, Ericsson has directly infringed and continues to directly infringe, either literally or under the doctrine of equivalents, one or more claims, including at least claim 30 of the `819 Patent in violation of 35 U.S.C. §§ 271 et seq. by determining location information of mobile devices in T-Mobile's cellular network through the utilization of Ericsson's location server equipment and software that operates in accordance with mobile positioning algorithms including certain aspects of cellular industry standards promulgated by the 3rd Generation Partnership Project (3GPP) and Open Mobile Alliance (OMA). Those standards include, for example, 3GPP TS 23.271 Release 16 ("TS 23.271"); UserPlane Location Protocol, Approved Version 2.0.4, Open Mobile Alliance ("OMA SUPL Specification"); 3GPP TS 38.305 Release 15 ("TS 38.305"); 3GPP TS 36.305 Release 16 ("TS 36.305"); 3GPP TS 36.455 Release 16 ("TS 36.455"); 3GPP TS 37.355 Release 16 ("TS 37.355"); and 3GPP TS 23.071 Release 16 ("TS 23.071").

55.   For example, claim 30 of the `819 Patent recites the following:

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A method comprising:

[A] receiving femto base station timing information related to a user equipment;

[B] receiving macro base station timing information related to the user equipment;

[C] receiving particle information for a first set of particles corresponding to possible user equipment locations;

[D] receiving femto base station position information; and

[E] determining user equipment location information based on a first particle filtering for particle filtering the first set of particles based on the base station information.

56.   On information and belief, and based on publicly available information, Ericsson's location servers and software and related services, which are deployed in T-Mobile's cellular networks, satisfy each and every limitation of at least claim 30 of the `819 Patent by utilizing Ericsson's E-SMLCs, SMLCs, SLPs, and/or LMF for the provision of mobile location services. Ericsson is and has been an active member of the Open Mobile Alliance (OMA) for more than a decade and makes and uses equipment that implements a number of OMA standards related to mobile positioning including the OMA SUPL Specification. *See* http://omaspecworks.org/membership/current-members/ (last visited May 12, 2021), https://developer.att.com/technical-library/device-technologies/mobile-web-standards (last visited May 12, 2021). For example, T-Mobile implements the OMA SUPL Specification in the provision of location services such as the T-Mobile FamilyWhere service using Ericsson's location servers and software. *See* https://www.t-mobile.com/support/plans-features/t-mobile-familywhere-app (last visited May 12, 2021). T-Mobile discloses that "With T-Mobile FamilyWhere® a T-Mobile primary account holder can use the FamilyWhere Android app or the My T-Mobile website to locate any phone on their plan that is on the T-Mobile network." *Id.*

57.   Also, according to the 3GPP Standard, the E-SMLC and related software provided

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by Ericsson is responsible for calculating the final location and velocity estimate of the mobile device attached to the E-UTRAN (Evolved UMTS Terrestrial Radio Access Network). *See, e.g.*, TS 23.271 § 6.3.14. Similarly, the 3GPP Standard describes the LMF as the network element responsible for different location services for mobile devices, including positioning of the devices. *See, e.g.*, TS 38.305 § 5.1.

58.   Ericsson's location servers and software deployed in T-Mobile's cellular networks meet all the requirements of limitation A of claim 30. Limitation A requires the step of "receiving femto base station timing information related to a user equipment." On information and belief, Ericsson's location servers and software deployed in T-Mobile's cellular networks determine location information of mobile devices by relying in part on femto base station timing information related to mobile devices in communication with femtocells in T-Mobile's networks. For example, T-Mobile provides FemtoCell service to its subscribers. *See, e.g.,* https://www.t-mobile.com/support/coverage/4g-lte-cellspot (last visited May 12, 2021); https://www.t-mobile.com/support/coverage/wi-fi-cellspot-router-setup-andamp-help (May 12, 2021). FemtoCells provided by T-Mobile to its subscribers include the Nokia SS2FII and the Alcatel Lucent 9961. *See* https://community.t-mobile.com/other-devices-11/cellspot-v2-update-email-how-14127 (last visited May 12, 2021) and https://www.reddit.com/r/tmobile/comments/7wmhxf/question_about_the_tmobile_4g_lte_cellspot_v1/ (last visited May 12, 2021). By way of further non-limiting example, T-Mobile's E-SMLCs communicate with reachable base stations, which include femto base stations to obtain base station timing information related to a mobile device. *See, e.g.*, TS 36.305 § 5.2; *see also, e.g.*, TS 36.455 §§ 7, 9. Therefore, T-Mobile's mobile location services meet limitation A of claim 30.

59.   Ericsson's location servers and software deployed in T-Mobile's cellular networks

also meet all the requirements of limitation B of claim 30. Limitation B requires the step of "receiving macro base station timing information related to the user equipment." As discussed above, Ericsson's E-SMLCs and software communicate with reachable base stations, which also include macro base stations in order to obtain base station timing information related to a mobile device. *See, e.g.*, TS 36.305 § 5.2; *see also, e.g.*, TS 36.455 §§ 7, 9. As such, Ericsson's location servers and software deployed in T-Mobile's cellular networks meet limitation B of claim 30.

60.   Ericsson's location servers and software deployed in T-Mobile's cellular networks also meet all the requirements of limitation C of claim 30. Limitation C requires the step of "receiving particle information for a first set of particles corresponding to possible user equipment locations." On information and belief, Ericsson's location servers and software receives particle information for a set of particles corresponding to possible locations of a mobile device. By way of non-limiting example, Ericsson's location servers such as its E-SMLCs receive possible locations corresponding to a mobile device as reported by the mobile device to the location server in the *ProvideLocationInformation* message body shown below. *See, e.g.*, TS 37.355 § 6. Therefore, Ericsson's location servers and software deployed in T-Mobile's cellular networks meet limitation C of claim 30.

```
ASN1START

ProvideLocationInformation ::= SEQUENCE {
    criticalExtensions      CHOICE {
        c1                        CHOICE {
            provideLocationInformation-r9   ProvideLocationInformation-r9-IEs,
            spare3 NULL, spare2 NULL, spare1 NULL
        },
        criticalExtensionsFuture    SEQUENCE {}
    }
}

ProvideLocationInformation-r9-IEs ::= SEQUENCE {
    commonIEsProvideLocationInformation
                                   CommonIEsProvideLocationInformation OPTIONAL,
    a-gnss-ProvideLocationInformation    A-GNSS-ProvideLocationInformation    OPTIONAL,
    otdoa-ProvideLocationInformation     OTDOA-ProvideLocationInformation     OPTIONAL,
    ecid-ProvideLocationInformation      ECID-ProvideLocationInformation      OPTIONAL,
    epdu-ProvideLocationInformation      EPDU-Sequence                        OPTIONAL,
    ...,
    [[
    sensor-ProvideLocationInformation-r13
                                   Sensor-ProvideLocationInformation-r13
                                                                        OPTIONAL,
    tbs-ProvideLocationInformation-r13   TBS-ProvideLocationInformation-r13   OPTIONAL,
    wlan-ProvideLocationInformation-r13 WLAN-ProvideLocationInformation-r13 OPTIONAL,
    bt-ProvideLocationInformation-r13    BT-ProvideLocationInformation-r13    OPTIONAL
    ]],
    [[  nr-ECID-ProvideLocationInformation-r16
                                   NR-ECID-ProvideLocationInformation-r16     OPTIONAL,
        nr-Multi-RTT-ProvideLocationInformation-r16
                                   NR-Multi-RTT-ProvideLocationInformation-r16 OPTIONAL,
        nr-DL-AoD-ProvideLocationInformation-r16
                                   NR-DL-AoD-ProvideLocationInformation-r16   OPTIONAL,
        nr-DL-TDOA-ProvideLocationInformation-r16
                                   NR-DL-TDOA-ProvideLocationInformation-r16  OPTIONAL
    ]]
}

-- ASN1STOP
```

61.   Ericsson's location servers and software deployed in T-Mobile's cellular networks meet all the requirements of limitation D of claim 30. Limitation D requires the step of "receiving femto base station position information." On information and belief, Ericsson's location servers and software receive a reachable femto base station's position information from the femto base station. For example, the E-SMLC communicates with reachable eNodeBs including femto base stations in order to obtain location information of the base station. *See, e.g.*, TS 36.455 §§ 7, 8.2, 9.2; *see also, e.g.*, TS 36.305 § 5.2.

62.   By way of further non-limiting example, Ericsson's location servers such as an E-SMLC may also receive position information of an eNodeB including femtocells from a T-Mobile database or data source containing known positions of eNodeBs. Also, for location services such

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as E911, T-Mobile's femto base stations are equipped with GPS receivers for reporting their position information to the location server. *See* https://www.t-mobile.com/support/public-files/images/support-non-device/4G%20LTE%20CellSpot%20Quick%20Start%20Guide.pdf (last visited May 12, 2021). Therefore, T-Mobile's mobile location services meet limitation D of claim 30.

63.   Ericsson's location servers and software deployed in T-Mobile's cellular networks also meet all the requirements of limitation E of claim 30. Limitation E requires the step of "determining user equipment location information based on a first particle filtering for particle filtering the first set of particles based on the base station information." On information and belief, Ericsson's location servers and software determines a mobile device's location based on a first particle filtering of the first set of particles based on the base station information that the location server received. For example, the location estimates of a fixed position mobile device involve a spread of estimates around the actual mobile device position, having a statistical distribution. On information and belief, as estimated location samples or particles corresponding to mobile device location are continuously accumulated by Ericsson's location server and software over time, the particles are filtered for determining the location of the mobile device. Thus, Ericsson's location servers and software deployed in T-Mobile's cellular networks meet limitation E of claim 30.

64.   On information and belief, Ericsson's location servers and software deployed in T-Mobile's cellular networks receive and store instructions for executing the steps of claim 30 as described in paragraphs 56-63 above.

65.   Accordingly, on information and belief, Ericsson's location servers and software deployed in T-Mobile's cellular networks meet all the limitations of, and therefore infringe, at least claim 30 of the `819 Patent.

66.   Ericsson has notice that it infringes at least claim 30 of the '819 Patent at least as of September 2021 when its counsel communicated to K.Mizra that it was planning to seek to intervene in this action. Ericsson continues to infringe the `819 Patent based on the actions detailed above.

67.   On information and belief, Ericsson has also induced infringement of at least claim 30 of the '819 patent by T-Mobile pursuant to 35 U.S.C. § 271(b), and committed contributory infringement of at least claim 30 of the '819 patent pursuant to 35 U.S.C. § 271(c), by providing the hardware and software necessary for T-Mobile to perform the claimed method, along with instructions that induce T-Mobile to perform the claimed method.

68.   On information and belief, Ericsson takes active steps to induce infringement of at least claim 30 of the '819 patent by T-Mobile, knowing that those steps will induce, encourage, and facilitate direct infringement by T-Mobile in violation of 35 U.S.C. § 271(b). Such active steps include, but are not limited to, providing T-Mobile with instructions on the use of the above-described mobile location determination functionality, and participating in the installation, configuration, operation, and maintenance of location servers and software in T-Mobile's network specifically for the purpose of performing the infringing methods.

69.   On information and belief, Ericsson knows or should know that such activities induce T-Mobile to infringe at least claim 1 of the '819 patent by performing the claimed methods from at least September 2021.

70.   On information and belief, Ericsson also contributes to the infringement of at least claim 30 of the '819 patent by T-Mobile in violation of 35 U.S.C. § 271(c). Acts by Ericsson that contribute to the infringement of T-Mobile include providing location server hardware and software that are capable of implementing the above-described mobile location determination

functionality. The accused location server hardware and software are especially adapted for use in the infringing methods, and they have no substantial non-infringing uses. On information and belief, Ericsson knows or should know that such activities contribute to T-Mobile's infringement of at least claim 30 of the '819 patent by performing the claimed method.

71.   At least as of September 2021, Ericsson knows of the '819 patent and performs acts that it knows, or should know, induce and/or contribute to the direct infringement of at least claim 30 of the '819 patent by T-Mobile. Thus, Ericsson is indirectly liable for infringement of at least claim 30 of the '819 patent pursuant to 35 U.S.C. §§ 271(b) and 271(c).

72.   As a result of Ericsson's infringement of the `819 Patent, K.Mizra has suffered and continues to suffer substantial injury and is entitled to recover all damages caused by Ericsson's infringement to the fullest extent permitted by the Patent Act, together with prejudgment interest and costs for Ericsson's wrongful conduct.

PRAYER FOR RELIEF

WHEREFORE, K.Mizra respectfully requests judgment against T-Mobile and Ericsson as follows:

A.   That the Court enter judgment for K.Mizra on all causes of action asserted in this Complaint;

B.   That the Court enter judgment in favor of K.Mizra and against T-Mobile and Ericsson for monetary damages to compensate it for T-Mobile's and Ericsson's infringement of the Patent-in-Suit pursuant to 35 U.S.C. § 284, including costs and pre and post-judgment interest as allowed by law;

C.   That the Court enter judgment in favor of K.Mizra and against T-Mobile and Ericsson for accounting and/or supplemental damages for all damages occurring after any discovery cutoff and through the Court's entry of final judgment;

D.   That the Court adjudge T-Mobile's and Ericsson's infringement of the Patent-in-Suit to be willful dated from the filing of this Complaint;

E.   That the Court enter judgment that this case is exceptional under 35 U.S.C. § 285 and enter an award to K.Mizra of its costs and attorneys' fees; and

F.   That the Court award K.Mizra all further relief as the Court deems just and proper.

JURY DEMAND

K.Mizra requests that all claims and causes of action raised in this Complaint against T-Mobile and Ericsson be tried to a jury to the fullest extent possible.

Date: March 9, 2022   Respectfully submitted,

                                               /s/Cristofer Leffler
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                                               Counsel for Plaintiff K.Mizra LLC

CERTIFICATE OF SERVICE

Pursuant to the Federal Rules of Civil Procedure and Local Rule CV-5, I hereby certify that on March 9, 2022, all counsel of record who have appeared in this case are being served with a copy of the foregoing via the Court's CM/ECF system.

                                               /s/Cristofer Leffler
                                               Cristofer I. Leffler

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