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

K.MIZRA LLC,)	
)	
Plaintiff,)	
)	Case No. 2:21-cv-00243
v.)	
)	**JURY TRIAL DEMANDED**
VERIZON COMMUNICATIONS INC.,)	
CELLCO PARTNERSHIP D/B/A VERIZON)	
WIRELESS, VERIZON CORPORATE)	
SERVICES GROUP INC., and VERIZON)	
ONLINE LLC,)	
)	
Defendants.)	

COMPLAINT

Plaintiff K.Mizra LLC ("K.Mizra") files this Complaint against Defendants Verizon Communications Inc., Cellco Partnership D/B/A Verizon Wireless, Verizon Corporate Services Group Inc., and Verizon Online LLC (collectively, "Verizon").

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.   Defendant Verizon 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.   Plaintiff K.Mizra seeks appropriate damages and prejudgment and post-judgment interest for Verizon's infringement of the Patent-in-Suit.

THE PARTIES

4.   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.

5.   Defendant Verizon Communications Inc. ("Verizon Communications") is a Delaware corporation with a principal place of business at 1095 Avenue of the Americas, New York, NY 10036. Verizon Communications is registered to conduct business in the state of Texas and has appointed CT Corporation System, located at 350 North Saint Paul Street, Dallas, TX 75201, as its agent for service of process.

6.   Defendant Cellco Partnership d/b/a Verizon Wireless ("Verizon Wireless") is a Delaware partnership with its principal place of business at One Verizon Way, Basking Ridge, NJ 07920. On information and belief, Verizon Wireless is a wholly owned subsidiary of Verizon Communications.

7.   Defendant Verizon Corporate Services Group Inc. ("Verizon Corporate Services") is a corporation organized and existing under the laws of the State of New York, with a principal place of business at One Verizon Way, Basking Ridge, NJ 07920. On information and belief, Verizon Corporate Services is a wholly owned subsidiary of Verizon Communications.

8.   Defendant Verizon Online LLC ("Verizon Online") is a limited liability company organized and existing under the laws of the State of Delaware, with a principal place of business at 22001 Loudoun County Parkway, Ashburn, VA 20147. On information and belief, Verizon Online is a wholly owned subsidiary of Verizon Communications.

9.   On information and belief, Verizon's operations in the Eastern District of Texas are substantial and varied.

10.   Verizon operates one or more wireless telecommunications networks to provide wireless telecommunications services, including within the Eastern District of Texas, under brand names including "Verizon Wireless."

11.   Verizon Wireless advertises that its 4G LTE and 5G Nationwide networks are available within the Eastern District of Texas.

12.   Several Mobile Virtual Network Operators ("MVNOs") offer wireless telecommunications services to subscribers utilizing Verizon's wireless telecommunications networks. MVNOs utilizing Verizon's wireless network that advertise coverage within the Eastern District of Texas include CREDO Mobile, GreatCall, Page Plus Cellular, Total Wireless, and Visible.

13.   Verizon maintains multiple facilities in the Eastern District of Texas, including at least Verizon Wireless Company Stores located at each of 500 East Loop 281, Longview, TX 75605; 2040 Crockett Road, Palestine, TX 75801; 8988 South Broadway Avenue, Tyler, TX 75703; and 1016 West Southwest Loop 323, Tyler, TX 75701.

14.   Verizon advertises that it is presently seeking to hire for at least five "Technology"-directed positions within the Eastern District of Texas, including "Senior Software Engineer," "Sr. Manager – Salesforce.com Enterprise System," "Salesforce Sr. Business Analyst Sr. Solution Provider," "Lead DevOps Engineer," and "Principal Core Voice Engineer."

15.   By registering to conduct business in Texas and by maintaining facilities in at least the cities of Plano, Palestine, Longview, and Tyler, Verizon has multiple regular and established places of business within the Eastern District of Texas.

JURISDICTION AND VENUE

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

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

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

19.   Verizon 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. Verizon's infringement has caused substantial injury to K.Mizra, including within this District.

20.   Venue is proper in this District pursuant to 28 U.S.C. §§ 1400 and 1391 because Verizon has committed acts of infringement in this District and maintains regular and established places of business in this District.

THE `819 PATENT-IN-SUIT

21.   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.

22.   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.

23.   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.

24.   The `819 Patent is valid and enforceable under the United States Patent Laws.

25.   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*.

26.   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.

27.   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

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compared to mobile positioning technology such as 2G/3G homogenous cellular networks. *Id*. at 5:3-15.

28.   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*.

29.   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*.

30.   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.

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

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

32.   On information and belief, Verizon owns, deploys, operates, maintains, tests, and uses the Verizon CDMA, LTE, and 5G Networks which include location servers that perform mobile location service and positioning functionality as a part of its wireless communication services. Verizon'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 Verizon's mobile customers critically rely on Verizon's infrastructure for accurately locating mobile phones.

33.   Verizon's mobile location services infrastructure incorporates and/or utilizes location server equipment and operating software such as Verizon'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 Verizon network, each of which are typically referred to as an eNodeB or eNB in Verizon's 4G LTE network or ng-eNB or gNB in Verizon's 5G network. Moreover, such 4G and 5G base stations and femto base stations perform eNB or gNB functionality according to the 3GPP Standards.

34.   On information and belief, Verizon 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").

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

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.

36.   On information and belief, and based on publicly available information, Verizon'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. Verizon 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 related

to mobile positioning including the OMA SUPL Specification. *See*

http://omaspecworks.org/membership/current-members/ (last visited May 12, 2021),

https://opendevelopment.verizonwireless.com/content/dam/opendevelopment/pdf/OpenAccessRe

q/Reqs-LTE_OTADM_Oct2018.pdf (last visited May 12, 2021).   For example, Verizon

LBS/aGPS uses its 4G Secure User Plane Location (SUPL) Platform to provide "assistance to

mobile devices in acquiring its location quickly and accurately" as illustrated below. *See, e.g.*,

Verizon   LBS/aGPS   Service   (4G   Location)

https://opendevelopment.verizonwireless.com/content/dam/opendevelopment/pdf/LBSaGPS4GS

UPLFeatureOverview.pdf (last visited on Feb. 1, 2021). Verizon offers this service "as an alternate

approach if 'coarse location' does not meet the business needs." *Id*; *see also, e.g.*, OMA SUPL

Specification (describing the SUPL functionality for determining mobile device location).
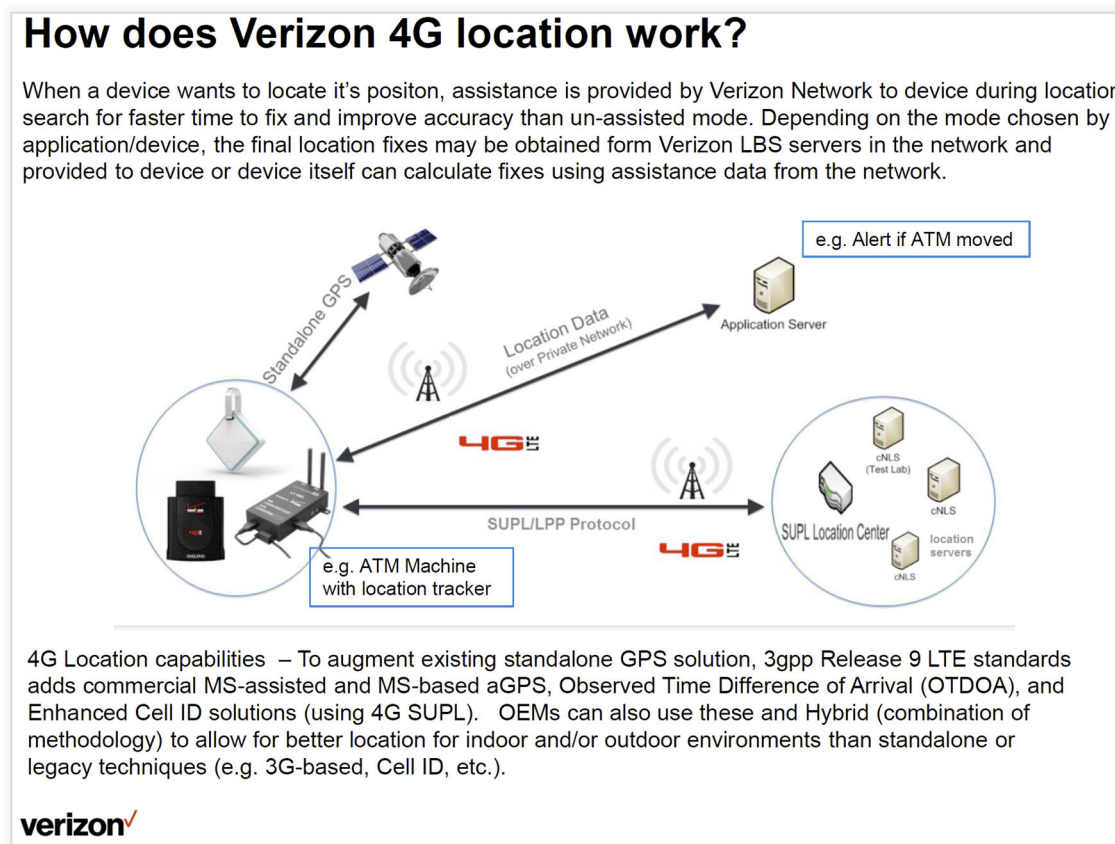
37.   Also, according to the 3GPP Standard, the E-SMLC is responsible for calculating

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.

38.   Verizon'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, Verizon'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 Verizon network. For example, Verizon offers femtocell service with its 4G LTE Network Extenders. *See, e.g.*, https://www.verizon.com/support/4g-lte-network-extender-enterprise-basics/ (last visited on Feb. 1, 2021). *See also, e.g.*, https://www.verizon.com/support/4g-lte-network-extender-faqs/ (last visited on Feb. 1, 2021). By way of further non-limiting example, Verizon's E-SMLCs communicate with reachable base stations, which include femto 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. Therefore, Verizon's mobile location services meet limitation A of claim 30.

39.   Verizon'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, Verizon's E-SMLCs 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, the Verizon's mobile location services meet limitation B of claim 30.

40.   The Verizon'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,

Verizon'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, Verizon'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, Verizon'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
```

41.   Verizon's mobile location services 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, Verizon'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 in order 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.

42.   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 Verizon database or data source containing known positions of eNodeBs. Also, for location services such as those related to E911, Verizon's femto base stations are equipped with GPS receivers for reporting their position information to the location server. For example, Verizon's "LTE Network Extender uses GPS   service   to   obtain   time   and   the   device   location   information." https://www.verizon.com/support/4g-lte-network-extender-faqs/ (last visited on Feb. 1, 2021). Therefore, Verizon's mobile location services meet limitation D of claim 30.

43.   Verizon'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, Verizon'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 Verizon's location server over time, the particles are filtered for determining the location of the mobile device. Thus, Verizon's mobile location services meet limitation E of claim 30.

44.   On information and belief, Verizon'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 47-54 above.

45.   Accordingly, on information and belief, Verizon's mobile location services meet all the limitations of, and therefore infringe, at least claim 30 of the `819 Patent.

46.   Verizon has notice that it infringes at least claim 30 of the `819 Patent at least as of the service of this complaint. Verizon continues to infringe the `819 Patent based on the actions detailed above.

47.   As a result of Verizon'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 Verizon's infringement to the fullest extent permitted by the Patent Act, together with prejudgment interest and costs for Verizon's wrongful conduct.

PRAYER FOR RELIEF

WHEREFORE, K.Mizra respectfully requests judgment against Verizon 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 Verizon for monetary damages to compensate it for Verizon'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 Verizon 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 Verizon'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 Verizon be tried to a jury to the fullest extent possible.

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DATED: June 30, 2021

Respectfully submitted,

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