

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

**MOBILITY WORKX, LLC,**

**Plaintiff,**

**v.**

**T-MOBILE US, INC.,  
T-MOBILE USA, INC.  
F/K/A METROPCS  
COMMUNICATIONS, INC. and  
F/K/A METROPCS WIRELESS, INC.,  
and  
METROPCS TEXAS LLC,**

**Defendants.**

**Civil Action No.:** \_\_\_\_\_

**JURY TRIAL DEMANDED**

**COMPLAINT FOR PATENT INFRINGEMENT**

Plaintiff Mobility Workx, LLC (“Mobility Workx” or “Plaintiff”), by and through its attorneys, files this Complaint for Patent Infringement against Defendants T-MOBILE US, INC., T-MOBILE USA, INC. F/K/A METROPCS COMMUNICATIONS, INC. and F/K/A METROPCS WIRELESS, INC., and METROPCS TEXAS LLC (collectively, “Defendants”). Plaintiff alleges the following:

**PARTIES**

1. Plaintiff Mobility Workx is a limited liability company organized and existing under the laws of the State of Florida, with a place of business at 215 Circle Drive, Winters, TX 79567. Plaintiff is the owner of seminal patents in various fields, including wireless communication systems and wireless network emulators. Plaintiff’s portfolio includes, for example, patents that teach valuable innovations and improvements related to predictive systems

for supporting wireless communication. Plaintiff is actively engaged in licensing efforts with respect to such technologies.

2. Defendant T-Mobile US, Inc. (“T-Mobile US”) is a Delaware corporation with its principal place of business at 12920 SE 38th Street, Bellevue, Washington 98006. On information and belief, T-Mobile US, Inc. may be served through its registered agent for service, Corporation Service Company, 2711 Centerville Rd. Suite 400, Wilmington, Delaware 19808.

3. Defendant T-Mobile USA, Inc. (“T-Mobile USA”) is a Delaware corporation with its principal place of business at 12920 SE 38th Street, Bellevue, WA 98006. T-Mobile USA, Inc. may be served through its registered agent, Corporation Service Company, 211 E. 7th Street, Suite 620, Austin, Texas 78701.

4. Defendant T-Mobile USA, Inc. f/k/a MetroPCS Communications, Inc. (“MetroPCS Communications”) and f/k/a MetroPCS Wireless, Inc. (“MetroPCS Wireless”), is a Delaware corporation with its principal place of business at 12920 SE 38th Street, Bellevue, WA 98006. MetroPCS may be served through its registered agent, Corporation Service Company, 211 E. 7th Street, Suite 620, Austin, Texas 78701.

5. Defendant MetroPCS Texas, LLC (“MetroPCS”) is a Delaware limited liability company with its principal office located at 12920 SE 38th Street, Bellevue, WA 98006. MetroPCS Texas may be served through its registered agent, Corporation Service Company dba CSC-Lawyers Incorporating Service Company, 211 E. 7th Street, Suite 620, Austin, Texas 78701.

6. Collectively T-Mobile USA, T-Mobile US, MetroPCS Communications, and MetroPCS Wireless, may be referred to herein as “T-Mobile.”

7. In 2013, T-Mobile US, Inc.'s parent, Deutsche Telekom AG, announced completion of the merger of T-Mobile US, Inc., and MetroPCS Communications, Inc. The merger resulted in the combined company, T-Mobile US, Inc., which has been publicly traded since May 1, 2013.

8. According to T-Mobile's website, it has "[t]he fastest, most advanced LTE network." (<https://www.t-mobile.com/coverage/4g-lte-network>).

9. Defendants offer postpaid and prepaid wireless voice, messaging, and data service to customers in all U.S. states and territories. T-Mobile's website states that "MetroPCS is the flagship prepaid brand of T-Mobile US, and a leading provider of unlimited talk, text and data plans . . . . MetroPCS offers the freedom and convenience of an affordable, no-contract wireless service, riding on T-Mobile's blazing-fast nationwide 4G LTE network." (<https://newsroom.t-mobile.com/news-and-blogs/metropcs-introduces-new-deal-for-families-looking-for-more-4g-lte-data-this-spring.htm>).

10. In connection with its provision of wireless services, Defendants offer Long-Term Evolution ("LTE") network services directly to customers (through retail stores and their websites) and to dealers and third-party distributors for resale through independent, third-party retail outlets and third-party websites.

### **JURISDICTION AND VENUE**

11. This action arises under the patent laws of the United States, 35 U.S.C. § 1 *et seq.*, including but not limited to §§ 271, 281, 282(a), 283, 284, and 285. This Court has subject matter jurisdiction over this patent infringement action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

12. This Court has personal jurisdiction over Defendants. Defendants have regularly conducted and continue to conduct business in the State of Texas and in the Eastern District of

Texas (“District”). On information and belief, Defendants have committed infringing activities in the United States, in Texas, and in this District by, at a minimum, providing, using, offering for sale, and/or selling products and/or services that infringe the Patents-In-Suit (as defined below), and/or by placing such infringing products into the stream of commerce with the awareness, knowledge, and intent that they would be provided, used, offered for sale, and/or sold by others in this judicial district and/or purchased by consumers in this judicial district.

13. Venue is proper in this District pursuant to 28 U.S.C. § 1400(b). Upon information and belief, Defendants (1) have committed infringing acts in this judicial district by, at a minimum, providing, using, offering for sale, and/or selling products and/or services that infringe the Patents-In-Suit, and (2) maintain a “regular and established” place of business in this district by, at a minimum, maintaining corporate stores in this district, where the accused products are provided and/or sold and/or other places of business where research and development and sales are conducted and/or where customer service is provided and/or repairs are made.

14. Defendants have a physical presence in the District, including, but not limited to, ownership of or control over property, inventory, infrastructure, or people. For example, T-Mobile USA, Inc., maintains and operates research and development facilities at 7668 Warren Parkway, Frisco, Texas 75034.

15. T-Mobile US, Inc., maintains an established place of business in Richardson, Texas.

16. Also, Defendants admit and advertise that they have a presence in this District. For example, T-Mobile’s website displays information for the “MCKINNEY T-Mobile” store, located at 1521 W. University Dr., Ste. 130, McKinney, Texas 75069, and states: “T-Mobile USA, Inc. provides wireless voice, messaging, data, and mobile internet services to customers

throughout MCKINNEY, TX.” (<https://www.t-mobile.com/store/cell-phone-mckinney-tx-3622.html>).

17. MetroPCS’s website allows a user to search by “Corporate” stores and “Authorized Dealers,” and identifies a “Corporate Store” located at 3300 K Avenue, Plano, TX 75074, with “Services” listed as “Payment Centers” and “Service/Exchange Phones.” (See <https://www.metropcs.com/find-store.html>).

18. Defendants derive benefits from their presence in this District, including, but not limited to, sales revenue. For example MetroPCS receives revenue from its corporate stores in this District, by selling their phones and services and by receiving payment for their services through “Payment Centers.” T-Mobile receives revenue from its corporate stores in this District, by selling its phones/products and services and by receiving payment for its phone/product and services.

19. Defendants interact, in a targeted way, with existing or potential customers, consumers, users, or entities within this District, e.g., through localized customer support, ongoing contractual relationships, or targeted marketing efforts. For example, T-Mobile states on its website: “At T-Mobile® we believe the right wireless devices and cell phone rate plan, including prepaid and no annual service contract plan options, can enhance the lives of our customers living in MCKINNEY, TX.” (<https://www.t-mobile.com/store/cell-phone-mckinney-tx-3622.html>). Additionally, both T-Mobile and MetroPCS provide coverage maps to customers and potential customers in this District via their websites, wherein a customer or potential customer can search for and view Defendants’ coverage areas for locations in this District. (See <https://www.metropcs.com/coverage.html> and <https://www.t-mobile.com/coverage/coverage-map>).

**THE PATENTS-IN-SUIT**

20. On April 13, 2010, U.S. Patent No. 7,697,508 (“‘508 Patent”) – entitled “System, Apparatus, and Methods for Proactive Allocation of Wireless Communication Resources” – was lawfully and properly issued by the United States Patent and Trademark Office (“USPTO”), after a full and fair examination. The named inventors on the ‘508 Patent are Edwin A. Hernandez-Mondragon of Coral Springs, Florida, and Abdelsalam A. Helal of Gainesville, Florida. A true and correct copy of the ‘508 Patent is attached hereto as Exhibit A and incorporated by reference.

21. Generally speaking, the ‘508 Patent teaches, among other things, a system for allocation of resources in a communications network for supporting wireless communications. This novel system provides various advantages and benefits. For example, it leads to reduced delays and information losses in wireless communication networks by reducing registration overhead and setup times associated with mobile node handoffs. These advantageous results, among others, are achieved by allocating communication network resources proactively rather than reactively.

22. On July 3, 2012, U.S. Patent No. 8,213,417 (“‘417 Patent”) – entitled “System, Apparatus, and Methods for Proactive Allocation of Wireless Communication Resources” – was lawfully and properly issued by the USPTO, after a full and fair examination. The named inventors on the ‘417 Patent are Edwin A. Hernandez-Mondragon of Coral Springs, Florida, and Abdelsalam A. Helal of Gainesville, Florida. A true and correct copy of the ‘417 Patent is attached hereto as Exhibit B and incorporated by reference.

23. As a continuation of the ‘508 Patent, the ‘417 Patent also teaches, among other things, a system for allocation of resources in a communications network for supporting wireless communications. This novel system provides various advantages and benefits. For example, it

leads to reduced delays and information losses in wireless communication networks by reducing registration overhead and setup times associated with mobile node handoffs. These advantageous results, among others, are achieved by allocating communication network resources proactively rather than reactively.

24. The '508 and '417 Patents may be referred to individually as a "Patent-in-Suit" or collectively as the "Patents-in-Suit."

25. The named inventors of the '508 and '417 Patents – Dr. Hernandez and Dr. Helal – are Plaintiff's managing partners. By way of assignment, Plaintiff is the owner of all substantial right, title, and interest in and to the Patents-in-Suit.

### **THE ACCUSED PRODUCT**

26. Defendants' infringing acts, as described in this Complaint, relate to their use, sale, and offers for sale of their LTE network. The specifications for the LTE standard are described on various publicly available websites, such as: [http://www.etsi.org/deliver/etsi\\_ts/136300\\_136399/136300/08.09.00\\_60/ts\\_136300v080900p.pdf](http://www.etsi.org/deliver/etsi_ts/136300_136399/136300/08.09.00_60/ts_136300v080900p.pdf). For example, T-Mobile's LTE network incorporates network components detailed in the LTE standard, including Evolved - Universal Terrestrial Radio Access Network NodeB ("eNB"), Mobility Management Entity ("MME"), Serving Gateway ("S-GW"), and User Equipment ("UE") components.

27. Examples of UE include the Samsung Galaxy S8, which is compatible with the T-Mobile LTE cellular network and directed, controlled, made, used, sold, offered for sale, imported, or otherwise distributed by or through Defendants and/or Defendants' suppliers, retailers, and resellers, for use on T-Mobile's LTE network ("T-Mobile UE"). (*See*

<https://www.t-mobile.com/cell-phone/samsung-galaxy-s8?color=midnightblack> *and*  
<https://www.metropcs.com/shop/phones/details/Samsung-Galaxy-S8/610214653192>).

28. Examples of eNBs include the Nokia 9926 eNodeB, which, upon information and belief, is compatible with the T-Mobile LTE cellular network and made, used, sold, offered for sale, or imported, by or through Defendants and/or Defendants' suppliers, retailers, and resellers, for use on T-Mobile's LTE network ("T-Mobile eNBs"). For example, "[t]he Nokia LTE hardware and software solutions developed for T-Mobile worked from day one, delivering improvements in the downlink and uplink speeds." (<https://resources.nokia.com/asset/200263>).

29. Examples of MMEs include the Nokia 9471 Wireless Mobility Manager, which, upon information and belief, is compatible with the T-Mobile LTE cellular network and made, used, sold, offered for sale, or imported by or through Defendants and/or Defendants' suppliers, retailers, and resellers, for use on T-Mobile's LTE network ("T-Mobile MMEs"). For example, "The Nokia LTE hardware and software solutions developed for T-Mobile worked from day one, delivering improvements in the downlink and uplink speeds." (<https://resources.nokia.com/asset/200263>).

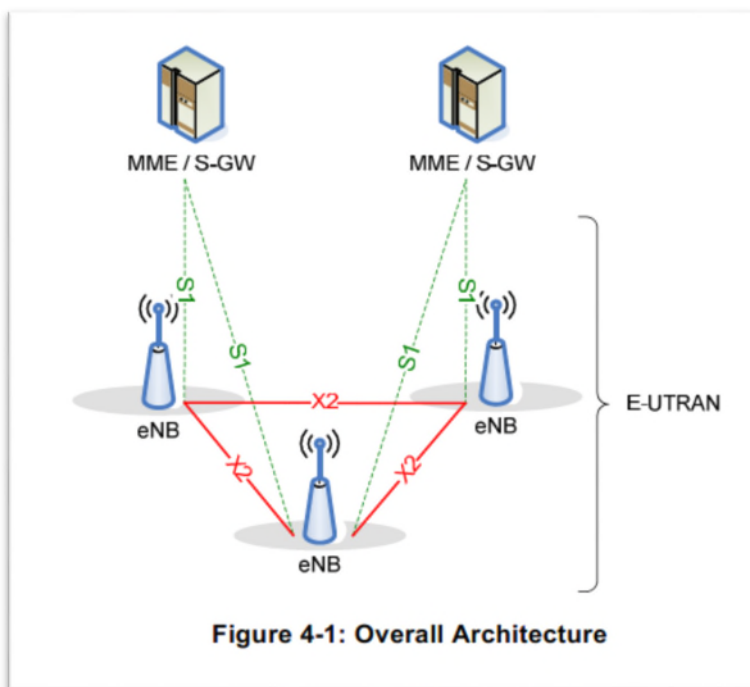
30. Examples of S-GWs include the Nokia 7750 Service Router, which, upon information and belief, is compatible with the T-Mobile LTE cellular network and made, used, sold, offered for sale, or imported by or through Defendants and/or Defendants' suppliers, retailers, and resellers, for use on T-Mobile's LTE network ("T-Mobile S-GWs"). For example, "[t]he Nokia LTE hardware and software solutions developed for T-Mobile worked from day one, delivering improvements in the downlink and uplink speeds." (<https://resources.nokia.com/asset/200263>).



31. The T-Mobile LTE Network, T-Mobile UE, T-Mobile eNBs, T-Mobile MMEs, and T-Mobile S-GWs, are collectively referred to as the Accused Product.

32. Upon information and belief, the Accused Product is compliant with the 3rd Generation Partnership Project (“3GPP”) Technical Standards for LTE network (Release 8), including TS 23.401, 24.301, 29.274, 36.300, 36.331, 36.401, 36.413, 36.423.

33. The T-Mobile UE, T-Mobile eNBs, T-Mobile MMEs, and T-Mobile S-GWs comprise critical components of T-Mobile’s LTE network, as shown in the Overall Architecture figure from the LTE standard below:



[https://www.etsi.org/deliver/etsi\\_ts/136300\\_136399/136300/08.09.00\\_60/ts\\_136300v080900p.pdf](https://www.etsi.org/deliver/etsi_ts/136300_136399/136300/08.09.00_60/ts_136300v080900p.pdf) (“3GPP TS 36.300”), p. 15.

34. In contrast to the circuit-switched model of previous cellular systems, LTE was designed to support only packet-switched services. It aims to provide seamless Internet Protocol (IP) connectivity between UE and the packet data network (“PDN”), without any disruption to

the end users' applications during mobility. *See, e.g.,* [https://www.cse.unt.edu/~rdantu/FALL\\_2013\\_WIRELESS\\_NETWORK/LTE\\_Alcatel\\_White\\_Paper.pdf](https://www.cse.unt.edu/~rdantu/FALL_2013_WIRELESS_NETWORK/LTE_Alcatel_White_Paper.pdf), p. 1.

**COUNT ONE: INFRINGEMENT OF THE '508 PATENT**

35. Plaintiff incorporates the above allegations as if set forth here in full.

36. The '508 Patent is valid and enforceable. Defendants do not have a license to practice the claimed inventions of the '508 Patent.

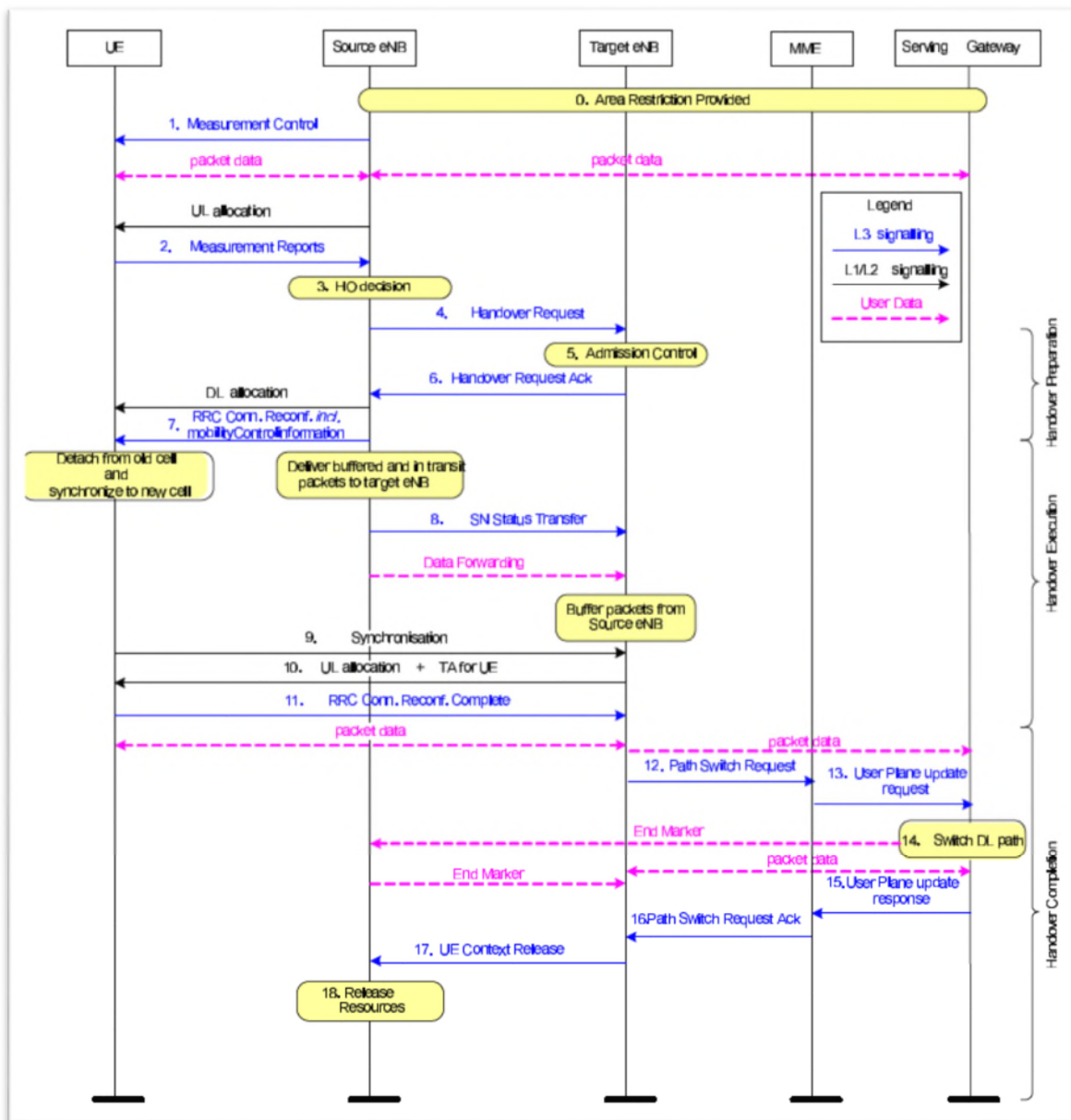
37. Defendants directly infringe one or more claims of the '508 Patent in this District and elsewhere in Texas and the United States.

38. Without the consent or authorization of Mobility Workx, Defendants make, have made, offer for sale, sell, import, and/or use the Accused Product, in violation of 35 U.S.C. § 271(a).

39. Defendants directly infringe at least Claim 1 of the '508 Patent. For example, on information and belief, Defendants offer for sale, sell, and/or use an Accused Product that meets each and every limitation in Claim 1 of the '508 Patent, which recites: "A system for handling mobile devices in a wireless communications network, the system comprising: a mobile node communicatively linked to the wireless communications network, wherein the mobile node has a corresponding geographical current state and one or more predicted geographical future states; at least one foreign agent identified for each of the geographical future states; at least one ghost mobile node associated with the mobile node, wherein said ghost mobile node can announce to said foreign agent the presence of said ghost mobile node; a ghost-foreign agent associated with said foreign agent, wherein said ghost foreign agent can announce to said mobile node or said ghost mobile node associated with the mobile node, the presence of said ghost foreign agent;

means for registering said ghost mobile node or mobile node with the associated ghost foreign agent or foreign agent, while the mobile node remains in the geographical current state; and means for linking the mobile node with a foreign agent associated with said ghost foreign agent when the mobile node enters a respective geographical future state associated with said foreign agent.”

40. Upon information and belief, the Accused Product provides for LTE network handovers using the X2 and/or S1 interfaces. For example:



3GPP TS 36.300, p. 46 (Figure 10.1.2.1.1-1: Intra-MME/Serving Gateway HO).

41. Defendants directly infringe at least Claim 1 of the ‘508 Patent by making, using, offering to sell, selling, and/or importing the Accused Product.

42. Defendants’ Accused Product meets every limitation of Claim 1 of the ‘508 Patent and therefore directly infringes Claim 1 of the ‘508 Patent.

43. Under the Defendant's direction or control, the Accused Product includes reports from a mobile node (UE) that contain events, such as a neighbor signal becoming better than a threshold, or a certain amount better than the signal of the node's current cell, which indicate to the network that a mobile node will be moving into a new cell (predicted geographical future state), and can trigger a handover to the new cell:

**5.5.4.5 Event A4 (Neighbour becomes better than threshold)**

The UE shall:

- 1> consider the entering condition for this event to be satisfied when condition A4-1, as specified below, is fulfilled;
- 1> consider the leaving condition for this event to be satisfied when condition A4-2, as specified below, is fulfilled;

**Inequality A4-1 (Entering condition)**

$$Mn + Ofn + Ocn - Hys > Thresh$$

**Inequality A4-2 (Leaving condition)**

$$Mn + Ofn + Ocn + Hys < Thresh$$

The variables in the formula are defined as follows:

- Mn** is the measurement result of the neighbouring cell, not taking into account any offsets.
- Ofn** is the frequency specific offset of the frequency of the neighbour cell (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell).
- Ocn** is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.
- Hys** is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).
- Thresh** is the threshold parameter for this event (i.e. *a4-Threshold* as defined within *reportConfigEUTRA* for this event).
- Mn** is expressed in dBm in case of RSRP, or in dB in case of RSRQ.
- Ofn, Ocn, Hys** are expressed in dB.
- Thresh** is expressed in the same unit as *Ms*.

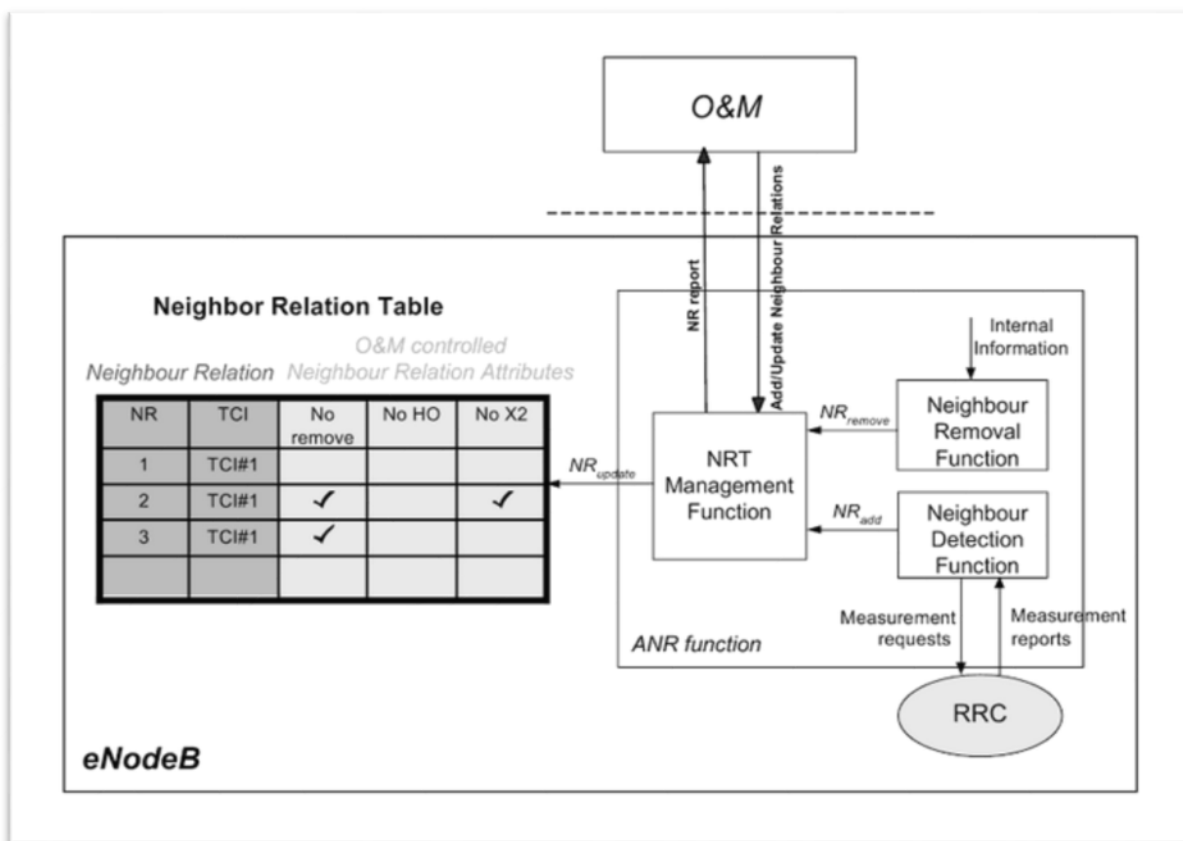
[https://www.etsi.org/deliver/etsi\\_ts/136300\\_136399/136331/10.07.00\\_60/ts\\_136331v100700p.pdf](https://www.etsi.org/deliver/etsi_ts/136300_136399/136331/10.07.00_60/ts_136331v100700p.pdf) (“3GPP TS 36.331”), p. 85-86.

44. The Accused Product includes a Source eNB that acts as a proxy for the UE and manages connection mobility control on its behalf. The Source eNB announces its presence to a Target eNB by sending a Handover Request message. For example:

The source eNB issues a HANOVER REQUEST message to the target eNB passing necessary information to prepare the HO at the target side (UE X2 signalling context reference at source eNB, UE S1 EPC signalling context reference, target cell ID,  $K_{eNB}$ , RRC context including the C-RNTI of the UE in the source eNB, AS-configuration, E-RAB context and physical layer ID of the source cell + MAC for possible RLF recovery). UE X2 / UE S1 signalling references enable the target eNB to address the source eNB and the EPC. The E-RAB context includes necessary RNL and TNL addressing information, and QoS profiles of the E-RABs.

3GPP TS 36.300, p. 46.

45. The Accused Product includes an Automatic Neighbour Relation Function that can announce information regarding neighboring cells. For example:



3GPP TS 36.300, p. 129.

46. These factual assertions, some of which are made on information and belief, are made to satisfy the pleadings standards of Fed. R. Civ. P. 8(a), as applied and interpreted by *Twombly*, *Iqbal*, and their progeny. In accordance with Fed. R. Civ. P. 11, Plaintiff states,

without waiving any applicable privileges or protections, that such assertions are based upon Plaintiff's pre-suit investigation and due diligence, in reliance on publicly available information, documents, and products and analysis derived therefrom. Plaintiff will provide infringement contentions in accordance with this Court's local rules and will supplement those contentions when Defendants provide the technical documentation required by the Court's local patent rules and as may be requested or subpoenaed in discovery requests made pursuant to the Federal Rules of Civil Procedure.

47. Plaintiff expressly reserves the right to assert additional patents and additional claims, to identify additional infringing products, and to join additional entities who operate in concert with Defendants, in accordance with the Federal Rules of Civil Procedure, the Court's scheduling order, and the Court's local rules.

48. Plaintiff has been damaged by Defendants' infringing conduct and will continue to be damaged unless Defendants are enjoined from further infringement. Accordingly, upon finding for Plaintiff, the Court should award to Plaintiff damages adequate to compensate for the infringement, in an amount to be determined at trial, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the Court. Further, upon judgment in favor of Plaintiff, the Court should permanently enjoin Defendants from committing the infringing acts.

**COUNT TWO: INFRINGEMENT OF THE '417 PATENT**

49. Plaintiff incorporates the above allegations as if set forth here in full.

50. The '417 Patent is valid and enforceable. Defendants do not have a license to practice the claimed inventions of the '417 Patent.

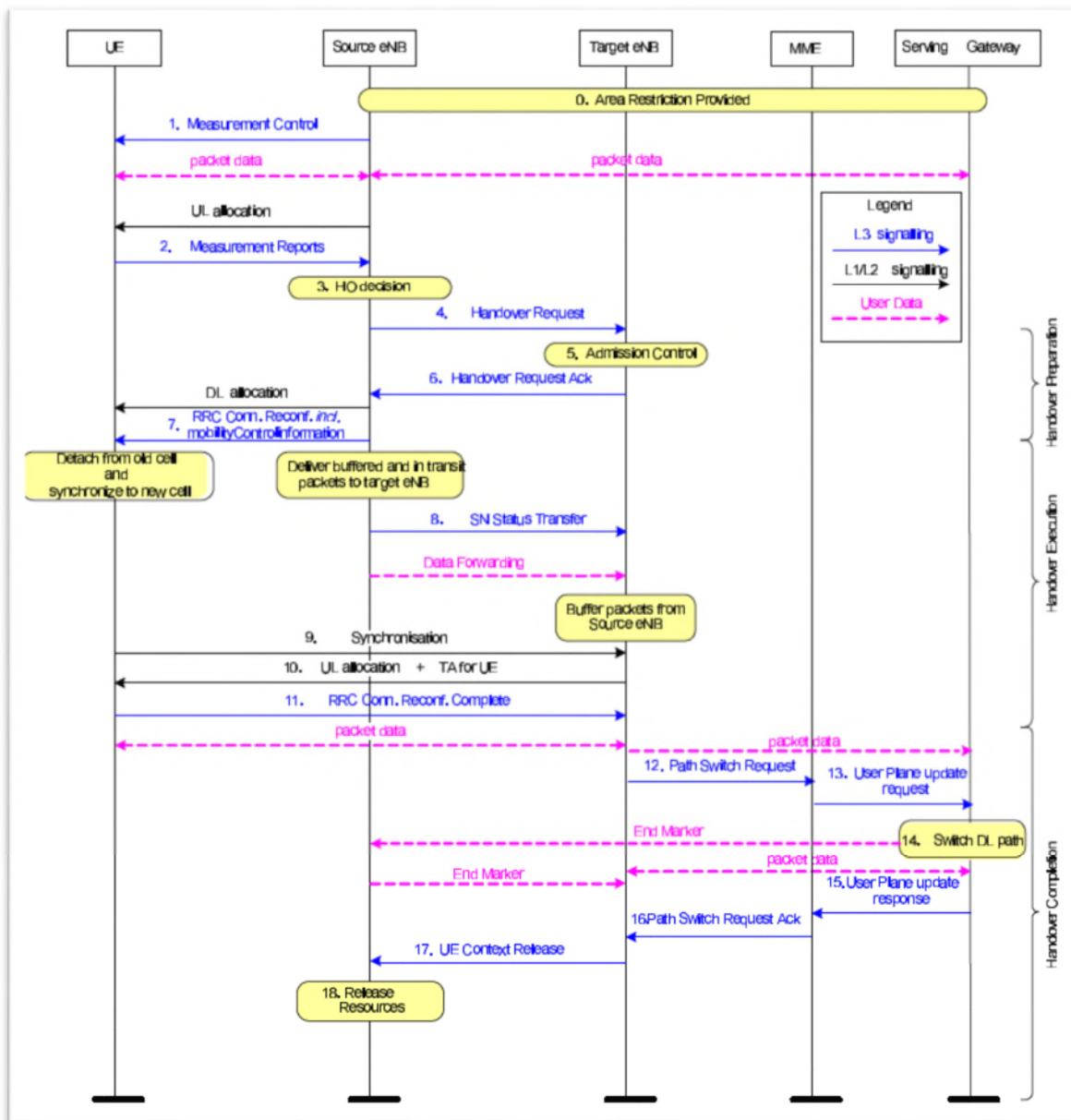
51. Defendants directly infringe one or more claims of the '417 Patent in this District and elsewhere in Texas and the United States.

52. Without the consent or authorization of Mobility Workx, Defendants make, have made, offer for sale, sell, import, and/or use the Accused Product, in violation of 35 U.S.C. § 271(a).

53. Defendants directly infringe at least Claim 1 of the '417 Patent. For example, on information and belief, Defendants make, offer for sale, sell, and/or use an Accused Product that meets each and every limitation in Claim 1 of the '417 Patent, which recites: "A system for communicating between a mobile node and a communication network; the network having at least one communications network node that is interconnected using a proxy mobile internet protocol (IP), comprising: at least one mobile node; at least one home agent; at least one foreign agent; a ghost-foreign agent that advertises messages to one of the mobile nodes indicating presence of the ghost-foreign agent on behalf of one of the foreign agents when the mobile node is located in a geographical area where the foreign agent is not physically present; and a ghost-mobile node that creates replica IP messages on behalf of a mobile node, the ghost-mobile node handling signaling required to allocate resources and initiate mobility on behalf of the mobile node, the ghost-mobile node triggering signals based on a predicted physical location of such mobile node or distance with relation to the at least one foreign agent."

54. Upon information and belief, the Accused Product provides for LTE network handovers using the X2 and/or S1 interfaces. For example:





3GPP TS 36.300, p. 46.

55. Defendants directly infringe at least Claim 1 of the '417 Patent by making, using, offering to sell, selling, and/or importing the Accused Product.

56. Defendants' Accused Product meets every limitation of Claim 1 of the '417 Patent and therefore directly infringes Claim 1 of the '417 Patent.

57. The Accused Product includes a Source eNB that acts as a proxy for the UE and manages connection mobility control on its behalf. The Source eNB announces its presence to a Target eNB by sending a Handover Request message. For example:

The source eNB issues a HANDOVER REQUEST message to the target eNB passing necessary information to prepare the HO at the target side (UE X2 signalling context reference at source eNB, UE S1 EPC signalling context reference, target cell ID,  $K_{eNB^*}$ , RRC context including the C-RNTI of the UE in the source eNB, AS-configuration, E-RAB context and physical layer ID of the source cell + MAC for possible RLF recovery). UE X2 / UE S1 signalling references enable the target eNB to address the source eNB and the EPC. The E-RAB context includes necessary RNL and TNL addressing information, and QoS profiles of the E-RABs.

3GPP TS 36.300, p. 46.

58. The Accused Product can advertise messages regarding neighboring cells. For example:

– **SystemInformationBlockType4**

The IE *SystemInformationBlockType4* contains neighbouring cell related information relevant only for intra-frequency cell re-selection. The IE includes cells with specific re-selection parameters as well as blacklisted cells.

<b>SystemInformationBlockType4 field descriptions</b>
<b>csg-PhysCellIdRange</b> Set of physical cell identities reserved for CSG cells on the frequency on which this field was received. The received <i>csg-PhysCellIdRange</i> applies if less than 24 hours has elapsed since it was received and the UE is camped on a cell of the same primary PLMN where this field was received. The 3 hour validity restriction (section 5.2.1.3) does not apply to this field. The UE shall not apply any stored <i>csg-PhysCellIdRange</i> when it is in <i>any cell selection</i> state defined in TS 36.304 [4].
<b>intraFreqBlackCellList</b> List of blacklisted intra-frequency neighbouring cells.
<b>intraFreqNeighbCellList</b> List of intra-frequency neighbouring cells with specific cell re-selection parameters.
<b>q-OffsetCell</b> Parameter "Qoffset <sub>s,n</sub> " in TS 36.304 [4].

– **SystemInformationBlockType5**

The IE *SystemInformationBlockType5* contains information relevant only for inter-frequency cell re-selection i.e. information about other E-UTRA frequencies and inter-frequency neighbouring cells relevant for cell re-selection. The IE includes cell re-selection parameters common for a frequency as well as cell specific re-selection parameters.

[https://www.etsi.org/deliver/etsi\\_ts/136300\\_136399/136331/10.07.00\\_60/ts\\_136331v100700p.](https://www.etsi.org/deliver/etsi_ts/136300_136399/136331/10.07.00_60/ts_136331v100700p.pdf)

[pdf](https://www.etsi.org/deliver/etsi_ts/136300_136399/136331/10.07.00_60/ts_136331v100700p.pdf) (“3GPP TS 36.331”), p. 154.

59. The Accused Product includes the creation of replica IP messages on behalf of a mobile node. For example, the UE information sent by the UE to an eNB upon initial attachment to the network is replicated and sent during a handover:

## 6.4 UE associations in eNB

There are several types of UE associations needed in the eNB: the "eNB UE Context" used to store all information needed for a UE in active state and the associations between the UE and the logical S1 and X2 connections used for S1/X2-AP UE associated messages.

### **Definitions:**

#### **eNB UE context:**

An eNB UE context is a block of information in an eNB associated to one active UE. The block of information contains the necessary information required to maintain the E-UTRAN services towards the active UE. At least UE state information, security information, UE capability information and the identities of the UE-associated logical S1-connection shall be included in the eNB UE context. An eNB UE context is established when the transition to active state for a UE is completed or in target eNB after completion of handover resource allocation during handover preparation.

[https://www.etsi.org/deliver/etsi\\_ts/136400\\_136499/136401/08.06.00\\_60/ts\\_136401v080600p.pdf](https://www.etsi.org/deliver/etsi_ts/136400_136499/136401/08.06.00_60/ts_136401v080600p.pdf) ("3GPP TS 36.401"), p. 12.

60. The Accused Product includes reports from the mobile node (UE) that contain events, such as a neighbor signal becoming better than a threshold, or a certain amount better than the signal of the node's current cell, which indicate to the network that a mobile node will be moving into a new cell (predicted physical location) and can trigger a handover to the new cell.

**5.5.4.5 Event A4 (Neighbour becomes better than threshold)**

The UE shall:

l> consider the entering condition for this event to be satisfied when condition A4-1, as specified below, is fulfilled;

l> consider the leaving condition for this event to be satisfied when condition A4-2, as specified below, is fulfilled;

Inequality A4-1 (Entering condition)

$$Mn + Ofn + Ocn - Hys > Thresh$$

Inequality A4-2 (Leaving condition)

$$Mn + Ofn + Ocn + Hys < Thresh$$

The variables in the formula are defined as follows:

***Mn*** is the measurement result of the neighbouring cell, not taking into account any offsets.

***Ofn*** is the frequency specific offset of the frequency of the neighbour cell (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell).

***Ocn*** is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.

***Hys*** is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

***Thresh*** is the threshold parameter for this event (i.e. *a4-Threshold* as defined within *reportConfigEUTRA* for this event).

***Mn*** is expressed in dBm in case of RSRP, or in dB in case of RSRQ.

***Ofn*, *Ocn*, *Hys*** are expressed in dB.

***Thresh*** is expressed in the same unit as ***Ms***.

[https://www.etsi.org/deliver/etsi\\_ts/136300\\_136399/136331/10.07.00\\_60/ts\\_136331v100700p.pdf](https://www.etsi.org/deliver/etsi_ts/136300_136399/136331/10.07.00_60/ts_136331v100700p.pdf) (“3GPP TS 36.331”), p. 85-86.

61. These factual assertions, some of which are made on information and belief, are made to satisfy the pleadings standards of Fed. R. Civ. P. 8(a), as applied and interpreted by *Twombly*, *Iqbal*, and their progeny. In accordance with Fed. R. Civ. P. 11, Plaintiff states, without waiving any applicable privileges or protections, that such assertions are based upon Plaintiff’s pre-suit investigation and due diligence, in reliance on publicly available information, documents, and products and analysis derived therefrom. Plaintiff will provide infringement contentions in accordance with this Court’s local rules and will supplement those contentions when Defendants provide the technical documentation required by the Court’s local patent rules

and as may be requested or subpoenaed in discovery requests made pursuant to the Federal Rules of Civil Procedure.

62. Plaintiff expressly reserves the right to assert additional patents and additional claims, to identify additional infringing products, and to join additional entities who may infringe or who operate in concert with Defendants, in accordance with the Federal Rules of Civil Procedure, the Court's scheduling order, and the Court's local rules.

63. Plaintiff has been damaged by Defendants' infringing conduct and will continue to be damaged unless Defendants are enjoined from further infringement. Accordingly, upon finding for Plaintiff, the Court should award to Plaintiff damages adequate to compensate for the infringement, in an amount to be determined at trial, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the Court. Further, upon judgment in favor of Plaintiff, the Court should permanently enjoin Defendants from committing the infringing acts.

#### **DEMAND FOR JURY TRIAL**

64. Plaintiff hereby demands a trial by jury on all issues.

#### **PRAYER FOR RELIEF**

WHEREFORE, Plaintiff respectfully prays for entry of judgment as follows:

- a) That Defendants have infringed one or more claims of the Patents-in-Suit.
- b) That Defendants be ordered to provide an accounting;
- c) That Plaintiff is entitled to, and should recover, all damages to which Plaintiff is entitled under 35 U.S.C. § 284, but in no event less than a reasonable royalty;

- d) That Defendants be permanently enjoined from further infringement of the Patents-in-Suit;
- e) That Plaintiff, as the prevailing party, shall recover from Defendants all taxable costs of court;
- f) That Plaintiff shall recover from Defendants all pre- and post-judgment interest on the damages award, calculated at the highest interest rates allowed by law;
- g) That this case is exceptional and that Plaintiff shall therefore recover its attorney's fees and other recoverable expenses, under 35 U.S.C. § 285; and
- h) That Plaintiff shall recover from Defendants such other and further relief as the Court may deem appropriate.

Dated: August 14, 2017

Respectfully submitted,

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