EXHIBIT A

Exhibit A - U.S. Patent No. 8,891,347 ("'347 Patent")

Accused Instrumentalities: (1) cellular base stations that support 3GPP 5G NR beamforming, and (2) cellular user equipr
5G NR beamforming.

Based upon publicly available information and without the benefit of discovery in this case, the accused base stations inc
following products sold by Nokia, Ericsson, and Samsung:

Nokia: AirScale base station, AirScale radio and baseband, AirScale 5G mMIMO base station, ReefShark System on Ch
the same, AirScale Osprey, AirScale Habrok, AirScale mRRH, AirScale pRRH, AirScale 4.5G Pro RRH, AirScale sH
FHFB, AZHL, AAFIA, 32TRX, and 64TRX.

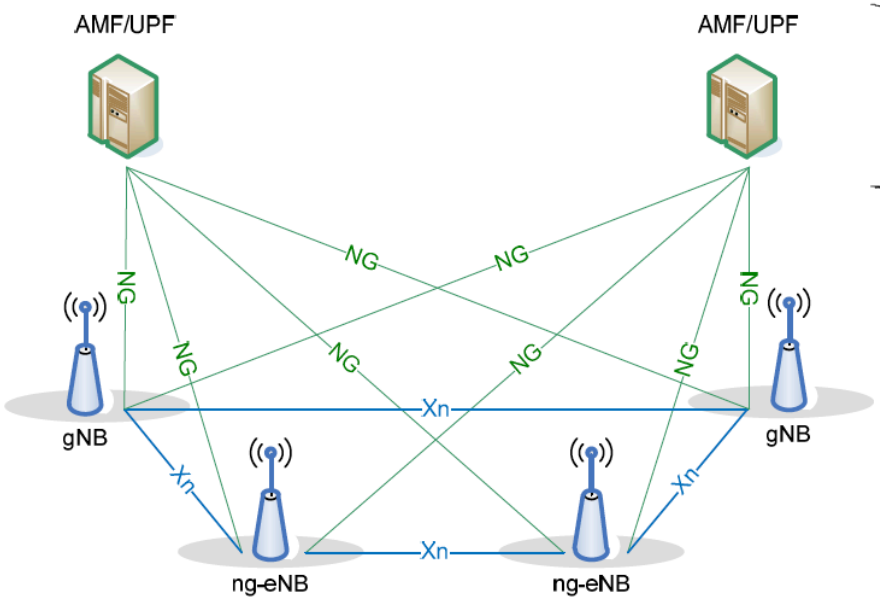
Ericsson: 5G AIR products, 5G Baseband products, 5G Radio products, 5G Antenna products, AIR 1279, AIR 3218, AI
AIR 3246, AIR 3258, AIR 3268, AIR 3283, AIR 6419, AIR 6428, AIR 6468, AIR 6476, AIR 6488, Interleaved AIR, Ba
Baseband 6648, 5G Radio Dot, Radio 4407, Radio 4408, Radio 4412, Radio 4418, Radio 4485, Radio 4490, Radio 880
Antenna 4602, Antenna 5500, and Antenna 6600.

Samsung: 5G base stations, 4T4R CBRS Radio, 32T32R Radio, 64T64R Radio, C-Band Radio, CDU50, One Antenn
HubPro.

The accused UE devices include without limitation the Apple iPhone 12, iPhone 12 mini, iPhone 13, iPhone 13 mini,
Max, iPhone 14, iPhone 14 Plus, iPhone 14 Pro, iPhone 14 Pro Max, iPhone SE, iPad, iPad Air, iPad Mini, iPad Pro 11
Samsung Galaxy S10, Galaxy S20, Galaxy S20+, Galaxy S20 Ultra, Galaxy S20 FE, Galaxy S21, Galaxy S21+, Galax
Galaxy S22, Galaxy S22+, Galaxy S22 Ultra, Galaxy S23, Galaxy S23+, Galaxy S23 Ultra, Galaxy Z Flip3, Galaxy Z
Fold2, Galaxy Z Fold3, Galaxy Z Fold4, Galaxy A13, Galaxy A14, Galaxy A22, Galaxy A23, Galaxy A32, Galaxy A
Galaxy A52, Galaxy A53, Galaxy A71, Galaxy A73, Galaxy A90, Galaxy F42, Galaxy F52, Galaxy M13, Galaxy M3
Galaxy Note 10, Galaxy Note 10+, Galaxy Note 20, Galaxy Note 20 Ultra, and Galaxy Quantum 2; Google Pixel 4a, P
6a, and Pixel 7; Motorola Edge, Edge+, G Play, G Power, G Pure, G Stylus, and One; and UE devices (such as Wi-Fi g
use with defendant's home 5G Internet services.

Claim 1

Claim 1	Public Documentation
[1pre] A method for wireless communication in a system including a transmitter, a receiver, and a plurality of propagation paths formed between the transmitter and the receiver which are capable of carrying a signal transmitted by the transmitter to the receiver, the method comprising:	To the extent the preamble is found to be limiting, the Accused Instrumentalities perform a metho system including a transmitter, a receiver, and a plurality of propagation paths formed between the are capable of carrying a signal transmitted by the transmitter to the receiver. For example, the Accused Instrumentalities perform a method for beamforming 5G NR transmissio equipment (UE) utilizing the multipath transmission environment between the transmitter and rece example, in 3GPP standards documents such as TR 38.901 V15.0.0, TS 38.300 V2.0.0, and asso aspects of the operations associated with components of the Accused Instrumentalities. 4.1 Overall Architecture An NG-RAN node is either: - a gNB, providing NR user plane and control plane protocol terminations towards the - an ng-eNB, providing E-UTRA user plane and control plane protocol terminations to The gNBs and ng-eNBs are interconnected with each other by means of the Xn interface. Th also connected by means of the NG interfaces to the 5GC, more specifically to the AMF (Ac Management Function) by means of the NG-C interface and to the UPF (User Plane Functio interface (see TS 23.501 [3]). NOTE: The architecture and the F1 interface for a functional split are defined in TS 38

Claim 1	Public Documentation
	The NG-RAN architecture is illustrated in Figure 4.1-1 below.  **Figure 4.1-1: Overall Architecture** (3GPP TS 38.300 v17.2.0, § 4.1) LCS Local Coordinate System LOS Line Of Sight MIMO Multiple-Input-Multiple-Output MPC Multipath Component NLOS Non-LOS (3GPP TR 38.901 v15.0.0, § 3.2)

Claim 1	Public Documentation
	4. The number of rays per cluster shall be calculated as follows: $$M = \min\{\max(M_t M_{\mathrm{AOD}} M_{\mathrm{ZOD}}, 20), M_{\max}\}$$ (7.6- where: - $M_t = \lceil 4kc_{\mathrm{DS}}B \rceil$ - $M_{\mathrm{AOD}} = \left\lceil 4kc_{\mathrm{ASD}} \frac{\pi \cdot D_h}{180 \cdot \lambda} \right\rceil$ - $M_{\mathrm{ZOD}} = \left\lceil 4kc_{\mathrm{ZSD}} \frac{\pi \cdot D_v}{180 \cdot \lambda} \right\rceil$ - $M_{\max}$ is the upper limit of M, and it should be selected by the user of channel model based on the trad between simulation complexity and accuracy. - D_h and D_v are the array size in m in horizontal and vertical dimension, B is bandwidth in Hz, c_{ASD} an are the cluster spreads in degrees, and λ is the wavelength. - k is a "sparseness" parameter with value 0.5. It is noted that each MPC may have different AOD, ZOD, and delay. (3GPP TR 38.901 v15.0.0, § 7.6.2.2)

DOCKET ALARM

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts

Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research

With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips

Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS
Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS
Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS
Sync your system to PACER to automate legal marketing.