

# *Exhibit A*

Docket No.: 061240-8006.US05  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

---

In re Patent Application of:  
Li et al.

Application No.: 14/321,615

Confirmation No.: 1231

Filed: July 1, 2014

Art Unit: 2461

---

For: METHODS AND APPARATUS FOR SIGNAL  
TRANSMISSION AND RECEPTION IN A  
BROADBAND COMMUNICATION SYSTEM

---

Examiner: Dmitry Levitan

**AMENDMENT AND RESPONSE TO NON-FINAL OFFICE ACTION UNDER 37 CFR  
1.111**

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

Sir:

In response to the Non-Final Office Action mailed on April 21, 2016, please amend the above-identified U.S. patent application as follows:

**INTRODUCTORY COMMENTS**

**Amendments to the Claims** are reflected in the listing of claims which begins on page 2 of this paper.

**Remarks/Arguments** begin on page 8 of this paper.

Application No.: 14/321,615  
Response to Non-Final Office Action dated April 21, 2016

Docket No.: 061240-8006.US05

### AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1-20. (Canceled)

21. (Currently Amended) A communication method for a mobile device served by a base station in a communication system ~~employing Orthogonal Frequency Division Multiplexing (OFDM), the mobile device using-transmitting data information on data subcarriers and control information on control subcarriers in~~ an uplink frequency band ~~to transmit to~~ the base station, the method comprising:

receiving, at the mobile device, an instruction from the serving base station to transmit a probing signal;

forming, in response to the received instruction, the probing signal with a code sequence modulated in the frequency domain, wherein:

the probing signal ~~occupies a bandwidth that is narrower than a bandwidth of-is configured to overlap, in the time domain, with uplink signals transmitted over the~~ uplink frequency band ~~of the communication system;~~ and

the probing signal is configured to ~~avoid subcarriers overlap, in the frequency domain, that are assigned for use by an uplink control channel in~~ ~~with the data subcarriers but to avoid the control subcarriers in the uplink frequency band of~~ the communication system; and

transmitting the probing signal to the serving base station.

22. (Previously Presented) The method of claim 21, wherein transmission power of the probing signal is under power control.

Application No.: 14/321,615  
Response to Non-Final Office Action dated April 21, 2016

Docket No.: 061240-8006.US05

23. (Previously Presented) The method of claim 22, wherein an initial transmission power at the mobile device is set at least based on a path loss between the serving base station and the mobile device.

24. (Previously Presented) The method of claim 21, wherein the probing signal enables the serving base station to estimate a channel profile in the frequency domain.

25. (Previously Presented) The method of claim 24, wherein the channel profile is used by the serving base station to determine a transmission format for a subsequent transmission over the channel.

26. (Previously Presented) The method of claim 25, wherein the transmission format comprises a modulation/coding and pilot pattern.

27. (Previously Presented) The method of claim 24, wherein the channel profile is used for beamforming in a subsequent transmission by the serving base station.

28. (Currently Amended) A communication method for a base station serving a plurality of mobile devices in a communication system employing Orthogonal Frequency Division Multiplexing (OFDM), ~~the mobile device using the base station receiving data information on data subcarriers and control information on control subcarriers in an uplink frequency band to transmit to the base station from the plurality of mobile devices,~~ the method comprising:

transmitting an instruction to one of the plurality of mobile devices to transmit a probing signal, wherein:

Application No.: 14/321,615  
Response to Non-Final Office Action dated April 21, 2016

Docket No.: 061240-8006.US05

the probing signal is formed with a code sequence modulated in the frequency domain;

the probing signal occupies a bandwidth that is narrower than a bandwidth of is configured to overlap, in the time domain, with uplink signals transmitted over the uplink frequency band of the communication system; and

the probing signal is configured to avoid subcarrier overlap, in the frequency domain, that are assigned for use by an uplink control channel in with the data subcarriers but to avoid the control subcarriers in the uplink frequency band of the communication system; and

receiving the probing signal from the one of the plurality of the mobile devices.

29. (Previously Presented) The method of claim 28, wherein the base station utilizes the received probing signal to estimate a channel profile in the frequency domain.

30. (Previously Presented) The method of claim 29, wherein the base station utilizes the estimated channel profile to determine a transmission format for a subsequent transmission over the channel.

31. (Previously Presented) The method of claim 30, wherein the transmission format comprises a modulation/coding and pilot pattern.

32. (Previously Presented) The method of claim 29, wherein the base station utilizes the estimated channel profile for beamforming in a subsequent transmission.

# 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.