

PROVISIONAL APPLICATION FOR PATENT COVER SHEET – Page 1 of 2

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No. EM 247 485 069 US

INVENTOR(S)

Given Name (first and middle (if any))	Family Name or Surname	Residence (City and either State or Foreign Country)
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Additional inventors are being named on the _____ separately numbered sheets attached hereto

TITLE OF THE INVENTION (500 characters max):

Method, Apparatus and Computer Program for Power Control Related to Random Access Procedures

Direct all correspondence to:

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ENCLOSED APPLICATION PARTS (check all that apply)

Application Data Sheet. See 37 CFR 1.76

CD(s), Number of CDs _____

Drawing(s) Number of Sheets 4 _____

Other (specify) Exhibits A & B (35 pgs. total) _____

Specification (e.g. description of the invention) Number of Pages 16 _____

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PTO/SB/16 (10-07)

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Date _____

May 5, 2008

TYPED or PRINTED NAME Jerry Stanton

REGISTRATION NO. 46,008

(if appropriate)

TELEPHONE (203) 925-9400

Docket Number: 863.0099.P1(US)

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IN THE U.S. PATENT AND TRADEMARK OFFICE

In re U.S. Provisional Patent Application of:
Applicant: Korhonen et al.
U.S. Serial No.: to be assigned
Filing Date: herewith
Title: Method, Apparatus and Computer Program for Power Control Related to Random Access Procedures

Attorney Docket No.: 863.0099.P1(US)

Certificate of Mailing

I hereby certify that the following correspondence:

Provisional Application for Patent Cover Sheet - 2 pgs.

Specification - 16 pgs.

Drawings - 4 sheets

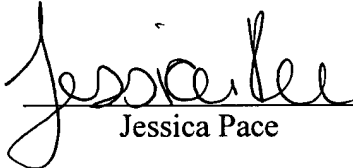
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Date: May 5, 2008



Jessica Pace

**METHOD, APPARATUS AND COMPUTER PROGRAM FOR POWER CONTROL
RELATED TO RANDOM ACCESS PROCEDURES**

TECHNICAL FIELD:

[0001] The exemplary and non-limiting embodiments of this invention relate generally to wireless communication systems, methods, devices and computer programs and, more specifically, relate to techniques for power control on different uplink messages sent from a communication device.

BACKGROUND:

[0002] Various abbreviations that appear in the specification and/or in the drawing figures are defined as follows:

3GPP	third generation partnership project
aGW	access gateway
C-RNTI	cell radio network temporary identifier
DL	downlink
DRX	discontinuous reception
eNB	EUTRAN Node B (evolved Node B)
EUTRAN	evolved UTRAN (also referred to as LTE)
LTE	long term evolution
MAC	medium access control
MME	mobility management entity
Node B	base station
OFDMA	orthogonal frequency division multiple access
PC	power control
PDCCH	physical downlink control channel
PDCP	packet data convergence protocol
PDSCH	physical downlink shared channel
PDU	protocol data unit
PHY	physical
PL	path loss
PRACH	physical random access channel
PRB	physical resource block
PUSCH	physical uplink shared channel
RACH	random access channel
RA-RNTI	random access radio network temporary identifier
RLC	radio link control
RRC	radio resource control
RRM	radio resource management
SC-FDMA	single carrier, frequency division multiple access
TA	timing advance
UE	user equipment
UL	uplink
UTRAN	universal terrestrial radio access network

[0003] A proposed communication system known as evolved UTRAN (E-UTRAN, also referred to as UTRAN-LTE, E-UTRA or 3.9G) is currently under development within the 3GPP. The current working assumption is that the DL access technique will be OFDMA, and the UL access technique will be SC-FDMA.

[0004] One specification of interest to these and other issues related to the invention is 3GPP TS 36.300, V8.4.0 (2008-03), 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Access Network (E-UTRAN); Overall description; Stage 2 (Release 8), which is incorporated by reference herein in its entirety.

[0005] Figure 1A reproduces Figure 4-1 of 3GPP TS 36.300, and shows the overall architecture of the E-UTRAN system. The E-UTRAN system includes eNBs, providing the E-UTRA user plane (PDCP/RLC/MAC/PHY) and control plane (RRC) protocol terminations towards the UE. The eNBs are interconnected with each other by means of an X2 interface. The eNBs are also connected by means of an S1 interface to an EPC, more specifically to a MME (Mobility Management Entity) by means of a S1-MME interface and to a Serving Gateway (S-GW) by means of a S1-U interface. The S1 interface supports a many-to-many relation between MMEs / Serving Gateways and eNBs.

[0006] Reference can also be made to 3GPP TS 36.321, V8.0.0 (2007-12), 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) Medium Access Control (MAC) protocol specification (Release 8).

[0007] Also of interest herein are the random access procedures of the LTE (E-UTRA) system. These procedures are described in 3GPP TS 36.300 v.8.4.0 at section 10.1.5 (attached hereto as Exhibit A), shown at Figure 1B for the Contention Based Random Access Procedure and at Figure 1C for the Non-Contention Based Random Access Procedure. These respectively reproduce Figures 10.1.5.1-1 and 10.1.5.1-2 of 3GPP TS 36.300 v.8.4.0, and Exhibit A details the various steps shown.

[0008] Briefly, the UE transmits a random access preamble and expects a response from the eNB in the form of a so-called Message 2 (e.g., Random Access Response at Figures 1B and 1C). Message 2 is transmitted on a DL shared channel DL-SCH (PDSCH, the PDCCH) and allocates resources on an UL-SCH (PUSCH). The resource allocation of Message 2 is

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