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UTILITY
PATENT APPLICATION
TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.

I-2-0674.1US

First Inventor

Zhang et al.

Title

WIRELESS COMMUNICATION METHOD AND...

Express Mail Label No.

EV441644862US

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☒ **Fee Transmittal Form** (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
2. ☐ **Applicant claims small entity status.**
See 37 CFR 1.27.
3. ☒ **Specification** [Total Pages 19]
Both the claims and abstract must start on a new page
(For information on the preferred arrangement, see MPEP 608.01(e))
4. ☒ **Drawing(s)** (35 U.S.C. 113) [Total Sheets 4]
5. **Oath or Declaration** [Total Sheets 4]
a. ☒ Newly executed (original or copy)
b. ☐ A copy from a prior application (37 CFR 1.63(d))
(for continuation/divisional with Box 18 completed)
i. ☐ **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s)
name in the prior application, see 37 CFR
1.63(d)(2) and 1.33(b).
6. ☒ **Application Data Sheet.** See 37 CFR 1.76
7. ☐ **CD-ROM or CD-R** in duplicate, large table or
Computer Program (Appendix)
☐ Landscape Table on CD
8. **Nucleotide and/or Amino Acid Sequence Submission**
(if applicable, items a. - c. are required)
a. ☐ Computer Readable Form (CRF)
b. ☐ Specification Sequence Listing on:
i. ☐ CD-ROM or CD-R (2 copies); or
ii. ☐ Paper
c. ☐ Statements verifying identity of above copies

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ACCOMPANYING APPLICATION PARTS

9. ☐ **Assignment Papers** (cover sheet & document(s))
Name of Assignee _____
10. ☐ **37 CFR 3.73(b) Statement** ☐ **Power of Attorney**
(when there is an assignee)
11. ☐ **English Translation Document** (if applicable)
12. ☐ **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)
☐ Copies of citations attached
13. ☐ **Preliminary Amendment**
14. ☒ **Return Receipt Postcard** (MPEP 503)
(Should be specifically itemized)
15. ☐ **Certified Copy of Priority Document(s)**
(if foreign priority is claimed)
16. ☐ **Nonpublication Request** under 35 U.S.C. 122(b)(2)(B)(i).
Applicant must attach form PTO/SB/35 or equivalent.
17. ☐ **Other:** _____

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title, or in an Application Data Sheet under 37 CFR 1.76:

☐ Continuation☐ Divisional☐ Continuation-in-part (CIP)

of prior application No.: _____

Prior application information:

Examiner _____

Art Unit: _____

19. CORRESPONDENCE ADDRESS



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OR



Correspondence address below

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Signature

Scott Wolinsky

Date

October 12, 2004

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(Print/Type)

Scott Wolinsky

Registration No.
(Attorney/Agent)

46,413

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LG Elecs. Ex. 1012

LG Elecs. v. Pantech Corp.

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FEE TRANSMITTAL

for FY 2005

Effective 10/01/2004. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$1,304.00
Complete if Known

Application Number	Not Yet Known
Filing Date	Not Yet Known
First Named Inventor	Zhang et al.
Examiner Name	Not Yet Known
Art Unit	Not Yet Known
Attorney Docket No.	I-2-0674.1US

METHOD OF PAYMENT (check all that apply)
☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:

Deposit Account Number: 09-0435
 Deposit Account Name: InterDigital Communications Corporation

The Director is authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☒ Credit any overpayments

☒ Charge any additional fee(s) or any underpayment of fee(s)

☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.
FEE CALCULATION**1. BASIC FILING FEE**

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1001 790	2001 395	Utility filing fee	790.00
1002 350	2002 175	Design filing fee	
1003 550	2003 275	Plant filing fee	
1004 790	2004 395	Reissue filing fee	
1005 160	2005 80	Provisional filing fee	
SUBTOTAL (1)			(\$ 790.00)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims	Extra Claims	Fee from below	Fee Paid
29	20	9	18.00
7	3	4	88.00

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description
1202 18	2202 9	Claims in excess of 20
1201 88	2201 44	Independent claims in excess of 3
1203 300	2203 150	Multiple dependent claim, if not paid
1204 88	2204 44	** Reissue independent claims over original patent
1205 18	2205 9	** Reissue claims in excess of 20 and over original patent
SUBTOTAL (2)		

SUBTOTAL (2) (\$ 514.00

*or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)**3. ADDITIONAL FEES**

Large Entity Small Entity

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1051 130	2051 65	Surcharge - late filing fee or oath	
1052 50	2052 25	Surcharge - late provisional filing fee or cover sheet	
1053 130	1053 130	Non-English specification	
1812 2,520	1812 2,520	For filing a request for ex parte reexamination	
1804 920*	1804 920*	Requesting publication of SIR prior to Examiner action	
1805 1,840*	1805 1,840*	Requesting publication of SIR after Examiner action	
1251 110	2251 55	Extension for reply within first month	
1252 430	2252 215	Extension for reply within second month	
1253 980	2253 490	Extension for reply within third month	
1254 1,530	2254 765	Extension for reply within fourth month	
1255 2,080	2255 1,040	Extension for reply within fifth month	
1401 340	2401 170	Notice of Appeal	
1402 340	2402 170	Filing a brief in support of an appeal	
1403 300	2403 150	Request for oral hearing	
1451 1,510	1451 1,510	Petition to institute a public use proceeding	
1452 110	2452 55	Petition to revive - unavoidable	
1453 1,330	2453 665	Petition to revive - unintentional	
1501 1,370	2501 685	Utility issue fee (or reissue)	
1502 490	2502 245	Design issue fee	
1503 660	2503 330	Plant issue fee	
1460 130	1460 130	Petitions to the Commissioner	
1807 50	1807 50	Processing fee under 37 CFR 1.17(q)	
1806 180	1806 180	Submission of Information Disclosure Stmt	
8021 40	8021 40	Recording each patent assignment per property (times number of properties)	
1809 790	2809 395	Filing a submission after final rejection (37 CFR 1.129(a))	
1810 790	2810 395	For each additional invention to be examined (37 CFR 1.129(b))	
1801 790	2801 395	Request for Continued Examination (RCE)	
1802 900	1802 900	Request for expedited examination of a design application	

Other fee (specify)

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$ 0.00**SUBMITTED BY**

(Complete if applicable)

Name (Print/Type)	Scott Wolinsky	Registration No. (Attorney/Agent)	46,413	Telephone	215-568-6400
Signature	<i>Scott Wolinsky</i>	Date	October 12, 2004		

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[0001] WIRELESS COMMUNICATION METHOD AND APPARATUS FOR
COORDINATING NODE-B'S AND SUPPORTING ENHANCED
UPLINK TRANSMISSIONS DURING HANDOVER

[0002] CROSS REFERENCE TO RELATED APPLICATIONS

[0003] This application claims the benefit of U.S. Provisional Application Serial
Nos. 60/517,656 filed November 5, 2003, 60/519,990 filed November 14, 2003,
60/520,692 filed November 17, 2003, and 60/578,674 filed June 10, 2004, which are
incorporated by reference as if fully set forth.

[0004] FIELD OF INVENTION

[0005] The present invention is related to a wireless communication system.
More particularly, the present invention is related to a method and apparatus for
coordinating Node-Bs and supporting enhanced uplink (EU) transmissions during
handover.

[0006] BACKGROUND

[0007] Many schemes have been proposed to improve coverage, throughput, and
transmission latency for EU transmissions in third generation partnership project
(3GPP). One of the developments is to move the functions for scheduling and assigning
uplink (UL) physical channel resources from a radio network controller (RNC) to a
Node-B. A Node-B can make more efficient decisions and manage UL radio resources
on a short-term basis better than the RNC, even if the RNC retains overall control over
Node-Bs. A similar approach has already been adopted in downlink for high speed
data packet access (HSDPA) in both universal mobile telecommunication system
(UMTS) frequency division duplex (FDD) and time division duplex (TDD) modes.

[0008] It has also been recognized that performance is greatly enhanced with the
use of medium access control (MAC) level automatic repeat request (ARQ) and hybrid
ARQ (H-ARQ). Application of these techniques during soft handover provides

additional significant benefits.

[0009] Figure 1 shows a conventional wireless multi-cell communication system 100 including a wireless transmit/receive unit (WTRU) 105, a Node-B 110, an RNC 115, and at least two cells 120A, 120B. Each of the cells 120A, 120B, is served by the Node-B 110. Node-B 110 is controlled by the RNC 115. When a change in the cell offering the best radio conditions is determined between cells 120A and 120B, a handover process is initiated.

[0010] An "intra-Node-B handover" occurs when a WTRU changes from one cell to another cell controlled by the same Node-B, as shown in Figure 1. An "inter-Node-B handover" occurs when a WTRU changes from one cell to another cell controlled by a different Node-B. In the latter case, the Node-B that controls the cell before the handover is called a source Node-B, and the Node-B that controls the cell after the handover is called a target Node-B.

[0011] During soft handover, a WTRU establishes a plurality of connections with a plurality of Node-Bs in an active set. In this situation, a problem may arise for scheduling and H-ARQ operation. A WTRU may receive conflicting EU transmission scheduling from more than one Node-B. It is also difficult for the WTRU to receive, decode and process H-ARQ positive and negative acknowledgements (ACKs/NACKs) generated by a plurality of Node-Bs. The soft buffer of an H-ARQ process in Node-Bs may be corrupted during soft handover.

[0012] One method to support H-ARQ across multiple Node-Bs, when the WTRU is in soft handover, is to place the ACK/NACK generation function in the RNC, which derives a single ACK/NACK based on the results from the multiple Node-Bs. However, this approach presents a significant delay to the ACK/NACK process, which is highly undesirable for performance reasons.

[0013] When a WTRU undergoes an inter-Node-B hard handover, there is a possibility that a source Node-B, which is a Node-B before hard handover is completed, may not successfully receive EU transmissions for data packets that have been NACKed prior to hard handover activation time. Other WTRUs competing for UL resources may not be provided with enough physical resources in the source cell. If

data blocks that have been NACKed prior to the handover are retransmitted to the source Node-B before the handover activation timer expires, those data blocks can be combined with the previous data blocks for H-ARQ decoding. In this way, the decoding takes the advantage of previous, although failed, transmissions of those data blocks in the source cell. If data blocks that have been NACKed prior to the handover are not retransmitted to the source Node-B before the handover activation timer is expired, they have to be transmitted again in the target cell as new data blocks. In this case, the previous transmissions of those data blocks in the source cell are not utilized.

[0014] SUMMARY

[0015] The present invention is related to a wireless communication method and apparatus for coordinating Node-Bs during handover for enhanced uplink transmission. The apparatus may be a wireless communication system, an RNC, a Node-B and/or an integrated circuit (IC).

[0016] In one embodiment, a wireless multi-cell communication system includes an RNC, a plurality of Node-Bs, and a plurality of WTRUs. Each Node-B serves at least one cell and schedules EU transmissions from the WTRUs. Once an RNC recognizes a need for soft handover, a WTRU establishes connections to Node-Bs in an active set. One of the Node-Bs in the active set is designated as a primary Node-B and all other Node-Bs are designated as a non-primary Node-B. An RNC or a WTRU selects a primary Node-B and informs the other Node-Bs about the primary Node-B. During soft handover, the primary Node-B schedules EU transmission and performs ACK/NACK.

[0017] In a separate embodiment, an RNC initiates a hard handover for a WTRU connected to the source Node-B. The RNC informs the source Node-B when the WTRU will stop transmission and reception while being connected to the source Node-B. The RNC sends an activation timer to the source Node-B to set the time for handover. The handover is completed when the activation timer expires.

[0018] The source Node-B may determine whether there are any previously transmitted data packets that were negatively acknowledged (NACKed) by the source

Node-B. In order to receive as many previously NACKed data packets as possible before the activation timer expires, the source Node-B may adjust the priority and/or adjust a modulation and coding scheme (MCS) used for data packet retransmissions sent by the WTRU.

[0019] BRIEF DESCRIPTION OF THE DRAWINGS

[0020] A more detailed understanding of the invention may be had from the following description, given by way of example and to be understood in conjunction with the accompanying drawings wherein:

[0021] Figure 1 shows a conventional wireless communication system;

[0022] Figure 2 shows a system which uses a UL scheduler located in a primary Node-B during soft handover for EU in accordance with the present invention;

[0023] Figure 3 shows a system which uses an ACK/NACK generation function located in a primary Node-B during soft handover for EU in accordance with the present invention;

[0024] Figure 4 is a flowchart of a process including method steps for coordinating Node-Bs during soft handover in accordance with one embodiment of the present invention; and

[0025] Figure 5 is a flowchart of a process including method steps for prioritizing the transmission of NACKed data in a source Node-B before hard handover is completed in accordance with a separate embodiment of the present invention.

[0026] DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0027] The present invention will be described with reference to the drawing figures wherein like numerals represent like elements throughout.

[0028] Hereafter, the terminology "WTRU" includes but is not limited to a user equipment (UE), a mobile station, a fixed or mobile subscriber unit, a pager, or any other type of device capable of operating in a wireless environment.

[0029] When referred to hereafter, the terminology "Node-B" includes but is not limited to a base station, a site controller, an access point or any other type of

interfacing device in a wireless environment.

[0030] The present invention may be implemented in any type of wireless communication systems, such as UMTS - FDD, TDD, time division synchronous code division multiple access (TDSCDMA), code division multiple access 2000 (CDMA2000) (EV-DO and EV-DV) or any other type of wireless communication system.

[0031] The features of the present invention may be incorporated into an IC or be configured in a circuit comprising a multitude of interconnecting components.

[0032] Figure 2 shows a wireless multi-cell communication system 200 which uses a UL scheduler located in a primary Node-B in accordance with the present invention. The wireless multi-cell communication system 200 includes a WTRU 205, a plurality of Node-Bs 210 (i.e., 210A, 210B), an RNC 215 and a plurality of cells 260 (i.e., 260A, 260B, 260C). Cells 260A and 260C are served by the Node-B 210A. Cells 260B are served by the Node-Bs 210B. All of the Node-Bs 210 are controlled by the RNC 215.

[0033] During soft handover, the WTRU 205 establishes multiple connections with the Node-Bs 210 included in an active set. Each transmission from the WTRU 205 is processed independently at each of the Node-Bs 210. One of the Node-Bs 210 in the active set is designated as a primary Node-B 210A, and the other Node-Bs are designated as non-primary Node-Bs 210B.

[0034] As shown in Figure 2, the primary Node-B 210A includes a MAC entity 250A including a UL scheduler 255. Each of the non-primary Node-Bs 210B also includes a MAC entity 250B. Each of the MAC entities 250A, 250B, handles EU transmissions. The UL scheduler 255 in the MAC entity 250A is responsible for scheduling the EU transmissions.

[0035] In accordance with one embodiment of the present invention, the UL scheduler 255 is implemented only at the primary Node-B 210A during soft handover. The WTRU 205 receives a UL transmission schedule only from the primary Node-B 210A in a primary cell 260A. However, the primary Node-B 210A cannot send the scheduling information to the non-primary Node-Bs 210B in every transmission time interval (TTI). In order to allow the primary Node-B 210A to allocate resources for the

WTRU 205 to transmit in cells controlled by the non-primary Node-Bs 210B, those resources scheduled by the primary Node-B 250A in a plurality of cells 260B controlled by the non-primary Node-Bs 210B cannot be assigned by the non-primary Node-Bs 210B. Therefore, some physical resources common to all of the cells in the active EU subset should be assigned and reserved by a particular Node-B for the WTRU 205 during the soft handover, so that those resources can be used only by the primary Node-B 210A.

[0036] The UL scheduler 255 located in the primary Node-B 210A considers the interference level caused by the EU transmission at any cell 260A, 260B, 260C, in the EU active subset to be below a predetermined maximum allowed interference level. Thus, the primary Node-B 250A limits the transmit power level of the WTRU 205 such that the interference levels are also within the maximum allowed interference levels at other cells 260B, 260C. To achieve this, the RNC 215 needs to relay necessary information, such as transmission power level and interference level, of the cells 260B controlled by the non-primary Node-Bs 210B to the primary Node-B 210A, which then uses the information to schedule the UL transmissions.

[0037] The EU scheduling information is transmitted to the WTRU 205 only by the primary Node-B 210A through the primary cell 260A. During soft handover, the WTRU 205 receives EU scheduling information only in the primary cell 260A, although the EU scheduling information is valid in all other cells 260B, 260C.

[0038] In one embodiment, the primary Node-B 250A is selected by either the RNC 215 or the WTRU 205. The RNC 215 may choose a Node-B that has the highest percentage of correctly received data blocks during a predefined time window as a primary Node-B.

[0039] In another embodiment, the RNC 215 generates statistics for each Node-B, such as a bit error rate (BER) or a frame error rate (FER), or the like, over a predetermined time period. Then, the RNC 215 may select a Node-B having the best performance to be the primary Node-B 210A. The RNC 215 then notifies the WTRU 205 and all other Node-Bs about the primary Node-B 210A via radio resource control (RRC) and Iub signaling, respectively.

[0040] In another embodiment, the WTRU 102 may choose a Node-B 210 that has the best downlink pilot power, (i.e., best downlink path loss or highest code power), as a primary Node-B 210A. The WTRU 205 measures the power of pilot signals received from all Node-Bs 210 and selects the Node-B 210 having the highest pilot power to be the primary Node-B 210A. The WTRU 205 then notifies all other Node-Bs about the primary Node-B 210A via fast physical layer signaling.

[0041] The WTRU 205 may report the downlink pilot power of all cells 260 to the RNC 215. The RNC 215 then chooses one Node-B 210 to be the primary Node-B 210A based on the combined uplink and downlink quality. The uplink quality of a cell 260 based on the percentage of correctly received data blocks, (or BER, FER, or the like), during a predefined time window, and the downlink quality of a cell 260 is based on the WTRU received downlink pilot power. Then, the RNC 215 notifies the WTRU 205 and all of the Node-Bs 210 about the primary Node-B 210A via RRC and Iub signaling, respectively.

[0042] The present invention is advantageous over prior art systems. Using the present invention, a WTRU does not receive conflicting scheduling of EU transmission from Node-Bs during soft handover. In addition, EU transmission is scheduled in consideration of an interference level and radio resources in cells controlled by non-primary Node-Bs. Signaling delay from the primary Node-B 210A to the WTRU 205 is much lower as compared to signaling delay from the RNC 215 to the WTRU 205.

[0043] In a separate embodiment, Figure 3 shows a wireless multi-cell communication system 300, similar to the system 200 shown in Figure 2. As shown in Figure 3, the primary Node-B 210A includes a MAC entity 250A including an ACK/NACK generator 305. Only the primary Node-B 210A has the ACK/NACK generator 305. The primary Node-B 210A may perform H-ARQ with incremental redundancy, or only ARQ without implementing incremental redundancy.

[0044] Still referring to Figure 3, the primary Node-B 210A receives at least one data packet from the WTRU 205 through the primary cell 260A and performs an error check on the data packet. Any error checking method, such as a cyclic redundancy check (CRC), may be utilized. If the primary Node-B 210A correctly decodes the data

packet, such as passing the CRC, the primary Node-B 210A transmits an ACK to the WTRU 205 and also transmits the correctly decoded data packet to the RNC 215. If the primary Node-B 210A fails to correctly decode the data packet, the primary Node-B 210A transmits a NACK to the WTRU 205.

[0045] The non-primary Node-Bs 210B also perform an error check on the data packet. However, the non-primary Node-Bs 210B do not send ACKs or NACKs to the WTRU 205. Instead, the non-primary Node-Bs send successfully decoded data packets to the RNC 215. During soft handover, only the primary Node-B 210A generates H-ARQ (or ARQ), ACKs and NACKs, and controls retransmissions.

[0046] The MAC layer WTRU identities received by the non-primary Node-Bs 210B may be used for routing of successfully received transmissions in a universal terrestrial radio access network (UTRAN). Since the non-primary Node-Bs 210B are not aware of which WTRUs have been scheduled for EU transmission by the primary Node-B 210A, the non-primary Node-Bs 210B may rely on in-band MAC layer signaling of the WTRU ID to route correctly received transmissions to the correct RNC radio link. Even though the primary Node-B 210A may be aware of which WTRU is scheduled, the same method may be implemented by the primary Node-B 210A.

[0047] Preferably, the primary Node-B 210A may use soft combining to process transmissions, while the non-primary Node-Bs 210B may process each transmission without soft combining. If the primary Node-B sends a NACK to the WTRU 205, the NACKed data packet is stored in a buffer of the primary Node-B 210A, and the NACKed data packet is combined with a retransmitted data packet. In contrast, the non-primary Node-Bs 210B do not store the NACKed data packets. This eliminates the problem of soft buffer corruption between the Node-Bs 210, and the complexities of multiple independent ACKs and/or NACKs.

[0048] When an incremental combining process is implemented, measures should be taken to avoid soft buffer corruption. Sequence information or a new data indicator is required to enable a Node-B 210 to detect that the WTRU 205 is no longer repeating data for a particular WTRU H-ARQ process, but instead is sending new data. This is specifically required because the Node-B 210 has no other way to learn that a new

transmission has started. Alternatively, the non-primary Node-Bs 210B may simply perform an ARQ, without using an incremental combining process. This eliminates the soft buffer corruption problem.

[0049] In the case where non-primary Node-Bs 210B perform simple ARQ without incremental combining, the WTRU 205 must transmit self-decodable data packets to ensure that all of the Node-Bs 210 may decode transmissions, regardless of the result of earlier transmissions. Preferably, the H-ARQ functionality is terminated at the Node-Bs 210. Each of the Node-Bs 210 sends to the RNC 215 successfully decoded data packets with explicit identification of transmission, such as a transmission sequence number (TSN). The RNC 215 may optionally use data packets delivered from the non-primary Node-Bs 210B. A MAC entity 310, located in the RNC 215, is used to implement an in-sequence delivery process for delivering data to higher layers over all of the packets received from the Node-Bs 210. After the RNC MAC entity 310 has completed its re-ordering process, it sends the data to a radio link control (RLC) (not shown). Missed packets are identified at the RNC 215 and the WTRU 205 is informed through RLC messaging.

[0050] Alternatively, EU transmissions may identify WTRU ID, H-ARQ process, transmission sequence and/or new data indication (NDI) to allow for soft combining in the non-primary Node-B's 210B. If this method is used to allow soft combining in the non-primary Node-Bs 210B, the primary Node-B 210A may not have to rely on scheduling and H-ARQ ACK/NACK decisions to determine when combining should be performed.

[0051] There are two options for the transmission of ACK/NACK messages. The first option is a synchronous transmission. The ACK/NACK messages are transmitted after a unique time delay with respect to the corresponding uplink transmission or the EU channel allocation message. The second option is an asynchronous transmission. There is no unique delay between the transmission of ACK/NACK messages and the corresponding uplink transmission or the EU channel allocation message. Explicit information in the ACK/NACK message identifies the corresponding uplink transmission to enable the WTRU 205 to make the correct association between the

ACK/NACK message and the transmission. This association is made by either identifying the H-ARQ process number and/or a unique sequence number, such as a TSN with each ACK/NACK feedback message to the WTRU 205.

[0052] In a separate embodiment, preferably implemented for the asynchronous ACK/NACK feedback case, the non-primary Node-Bs 210B may provide H-ARQ ACK/NACK results to the primary Node-B 210A in order to avoid unnecessary retransmissions for transmissions that are not correctly received by the primary Node-B 210A, but are correctly received by the non-primary Node-Bs 210B. A non-primary Node-B 210B does not directly send an ACK or NACK message to the WTRU 205. The non-primary Node-Bs 210B sends ACK/NACK or CRC results to the RNC 215. Then, the RNC 215 sends ACK or CRC results to the primary Node-B 210A.

[0053] In order to speed up H-ARQ processing, the first ACK message from any non-primary Node-B 210B received by the RNC is preferably immediately forwarded to the primary Node-B 210A. The primary Node-B 210A also immediately generates an ACK message if the transmission is received correctly in the primary Node-B 210A without waiting for feedback from the non-primary Node-Bs 210B. The primary Node-B 210A also generates an ACK message immediately upon reception of a forwarded ACK message from the RNC, even if other ACK messages may be forwarded. Since an ACK is generated if any of the paths are successful, an ACK can be generated as soon as the first successful transmission is found.

[0054] Alternatively, in order to simplify the design of the ACK/NACK generator 205, only a subset of the generating nodes may be used. For example, ACKs may be generated only at the RNC, or at the RNC and the primary Node-B 210A.

[0055] When the WTRU 205 sends an uplink transmission, for each H-ARQ process the WTRU 205 waits at least the time required for the primary Node-B 210A to send ACK/NACK feedback. For each H-ARQ process, if an ACK is received by the WTRU 205, the WTRU 205 may send new data in the next available or assigned opportunity.

[0056] A NACK message can only originate in the RNC 215 since it is the only node that has all of the information necessary in the soft handover to determine that

there have been no successful receptions at any Node-B 210. The RNC 215 generates a NACK command if the RNC 215 receives no ACK from the Node-Bs 210 within a predetermined time interval. The RNC 215 forwards the NACK message to the WTRU 205 via the primary Node-B 210A.

[0057] It is also possible that this procedure can be implemented without an explicit NACK command. In this case, the lack of ACK reception within a particular period of time is considered the same as an explicit NACK command at either the primary Node-B 210A and/or the WTRU 205.

[0058] Figure 4 is a flowchart of a process 400 including method steps for coordinating Node-Bs during soft handover in accordance with one embodiment of the present invention. In step 405, the RNC 215 makes a decision to initiate an inter-Node-B soft handover. In step 410, the WTRU 205 establishes connections with at least two Node-Bs 210 in an active set. In step 415, one of the Node-Bs 210 in the active set is designated as a primary Node-B 210A and the one or more Node-B(s) 210 remaining in the active set are designated as a non-primary Node-Bs 210B. In step 420, the primary Node-B 210A controls UL transmissions during soft handover by performing EU scheduling and H-ARQ operations.

[0059] Figure 5 is a flowchart of a process 500 including method steps for prioritizing the transmission of NACKed data in a source Node-B before hard handover is completed in accordance with a separate embodiment of the present invention. In step 505, the RNC 215 makes a decision to initiate a hard handover for a WTRU 205 connected to a source Node-B 210. In step 510, the RNC 215 informs the source Node-B 210 when the WTRU 205 will stop transmission and reception in the source cell 260. In step 515, the RNC 215 sends an activation timer to the source Node-B 210 to set the time for handover.

[0060] Still referring to Figure 5, if the source Node-B 210 determines that there are data packets that were previously NACKed, as many previously NACKed data packets as possible should be retransmitted before the handover activation timer expires. Otherwise, the system may lose the benefit of incrementally combining the previous transmission with the retransmission. Therefore, the source Node-B

scheduler 255 takes the handover activation time into account when it schedules the data packets that have been NACKed. If there is not enough radio resource for the source Node-B 210 to schedule transmission of all the NACKed data packets in time, the source Node-B 210 should manage to schedule transmission of as many NACKed data packets as possible.

[0061] Still referring to Figure 5, in order to transmit as many NACKed data packets as possible before the activation timer expires, the source Node-B 210 adjusts the priority of transmissions (step 525) and, in step 530, the source node-B 210 adjusts the MCS of the transmissions (step 530). Higher priority of scheduling is given to the data packets that have been NACKed. If the radio resources are sufficient, a more robust MCS may be used to increase the probability of successful transmissions from the WTRU 205 to the source Node-B 210. In step 535, the handover is completed at the expiration of the activation timer.

[0062] In order for the WTRU 205 to understand that the scheduled uplink transmission is intended for data blocks with previous transmission failures, the source Node-B 210 uplink scheduler 255 may specify that the scheduled UL transmission is intended for the data blocks that were previously NACKed. This may be implemented by including H-ARQ process identification in the UL scheduling information that is sent from the source Node-B 210 to the WTRU 205. By receiving the scheduling information from the source Node-B 210, the WTRU 205 knows that the scheduled transmission is for specific data associated with HARQ process identification sent together with the scheduling information.

[0063] While this invention has been particularly shown and described with reference to preferred embodiments, it will be understood by those skilled in the art that various changes in forms and details may be made therein without departing from the scope of the invention as described above.

* * *

CLAIMS

What is claimed is:

1. In a wireless multi-cell communication system including a radio network controller (RNC), a plurality of Node-Bs, and at least one wireless transmit/receive unit (WTRU), a method of coordinating Node-Bs during handover, the method comprising:

- (a) the RNC initiating an inter-Node-B soft handover;
- (b) the WTRU establishing communication connections with at least two of the Node-Bs;
- (c) designating a particular one of the Node-Bs as a primary Node-B;
- (d) designating the other one(s) of the Node-Bs as a non-primary Node-B; and
- (e) the RNC informing the Node-Bs that the particular Node-B is a primary Node-B.

2. The method of claim 1 further comprising:

- (f) the primary Node-B controlling an uplink (UL) transmission originating from the WTRU during soft handover.

3. The method of claim 2 wherein the primary Node-B schedules the UL transmission.

4. The method of claim 3 wherein the primary Node-B receives physical measurement information regarding the non-primary Node-B(s), and considers the information when scheduling the UL transmission.

5. The method of claim 4 wherein the primary Node-B transmits scheduling information to the WTRU and the non-primary Node-B(s).

6. The method of claim 1 further comprising:

(f) the primary Node-B controlling transmissions during soft handover by performing enhanced uplink (EU) scheduling and hybrid automatic repeat request (H-ARQ) operations.

7. The method of claim 6 wherein a positive acknowledgement (ACK) or negative acknowledgement (NACK) is transmitted either synchronously or non-synchronously from the primary Node-B to the WTRU.

8. The method of claim 6 wherein the non-primary Node-B transmits correctly decoded data blocks to the RNC.

9. The method of claim 1 wherein the primary Node-B is selected by the WTRU based on a downlink quality received from the Node-Bs.

10. The method of claim 9 wherein the downlink quality is downlink pilot power.

11. The method of claim 1 wherein the primary Node-B is selected by the RNC based on uplink performance statistics at each Node-B.

12. The method of claim 11 wherein the RNC selects the primary Node-B further based on a report generated by the WTRU regarding a downlink quality from the Node-Bs.

13. The method of claim 11 wherein the RNC selects the primary Node-B further based on a report generated by the WTRU regarding a combination of uplink and downlink quality.

14. In a wireless multi-cell communication system including a radio network controller (RNC), a source Node-B, a target Node-B and at least one wireless

transmit/receive unit (WTRU), a method of coordinating Node-Bs during handover, the method comprising:

- (a) the RNC initiating a hard handover for a WTRU connected to the source Node-B;
- (b) the RNC informing the source Node-B when the WTRU will stop transmission and reception while being connected to the source Node-B; and
- (c) the RNC sending an activation timer to the source Node-B to set the time for handover, wherein the handover is completed when the activation timer expires.

15. The method of claim 14 further comprising:

- (d) the source Node-B determining whether there are any previously transmitted data packets that were negatively acknowledged (NACKed) by the source Node-B; and
- (e) the source Node-B adjusting the priority of data packet transmissions sent by the WTRU in order to receive as many previously NACKed data packets as possible before the activation timer expires.

16. The method of claim 14 further comprising:

- (d) the source Node-B determining whether there are any previously transmitted data packets that were negatively acknowledged (NACKed) by the source Node-B; and
- (e) the source Node-B adjusting a modulation and coding scheme (MCS) used for data packet retransmissions sent by the WTRU in order to receive as many previously NACKed data packets as possible before the activation timer expires.

17. A wireless communication system for coordinating Node-Bs during handover for enhanced uplink communication, the system comprising:

- (a) a wireless transmit/receive unit (WTRU); and
- (b) a plurality of Node-Bs, each Node-B comprising an entity for enhanced uplink (EU) functionalities and processing a transmission from the WTRU independently, wherein a particular one of the Node-Bs is designated as being a primary Node-B, the

other Node-B(s) being designated as a non-primary Node-B, and the primary Node-B controlling EU transmissions from the WTRU during handover.

18. The system of claim 17 wherein the primary Node-B controls an uplink (UL) transmission originating from the WTRU during soft handover.

19. The system of claim 18 wherein the primary Node-B schedules the UL transmission.

20. The system of claim 19 wherein the primary Node-B receives physical measurement information regarding the non-primary Node-B(s), and considers the physical measurement information when scheduling the UL transmission.

21. The system of claim 19 wherein the primary Node-B transmits scheduling information to the WTRU and the non-primary Node-B(s).

22. The system of claim 17 wherein a positive acknowledgement (ACK) or negative acknowledgement (NACK) is transmitted either synchronously or non-synchronously from the primary Node-B to the WTRU.

23. In a wireless multi-cell communication system including a radio network controller (RNC), a plurality of Node-Bs, and at least one wireless transmit/receive unit (WTRU), an integrated circuit (IC) used to coordinate Node-Bs during handover, the IC comprising:

- (a) means for designating a particular one of the Node-Bs as a primary Node-B;
- (b) means for designating one or more other ones of the Node-Bs as a non-primary Node-B; and
- (c) means for informing the Node-Bs that the particular Node-B has been designated as a primary Node-B.

24. The IC of claim 23 wherein the IC is integrated with the RNC.

25. In a wireless multi-cell communication system including a radio network controller (RNC) and at least one wireless transmit/receive unit (WTRU), a Node-B comprising:

(a) means for communicating with the WTRU before and during inter-Node-B hard handover;

(b) means for determining whether there are any previously transmitted data packets that were negatively acknowledged (NACKed) by the source Node-B; and

(c) means for adjusting the priority of data packet retransmissions received from the WTRU in order to receive as many previously NACKed data packets as possible before the activation timer expires.

26. The Node-B of claim 25 further comprising:

(d) means for receiving an activation timer from the RNC, wherein the timer is used to set the time for handover; and

(e) means for adjusting a modulation and coding scheme (MCS) used for data packet retransmissions received from the WTRU in order to receive as many previously NACKed data packets as possible before the activation timer expires.

27. In a wireless multi-cell communication system including a plurality of Node-Bs, a radio network controller (RNC) comprising:

(a) means for controlling the plurality of Node-Bs;

(b) means for initiating an inter-node-B soft handover;

(c) means for designating a particular one of the Node-Bs as a primary Node-B;

(d) means for designating one or more other ones of the Node-Bs as a non-primary Node-B; and

(e) means for informing the Node-Bs that the particular Node-B has been designated as a primary Node-B.

28. In a wireless multi-cell communication system including a plurality of Node-Bs, an integrated circuit (IC) comprising:

- (a) means for controlling the plurality of Node-Bs;
- (b) means for initiating an inter-Node-B soft handover;
- (c) means for designating a particular one of the Node-Bs as a primary Node-B;
- (d) means for designating one or more other ones of the Node-Bs as a non-primary Node-B; and
- (e) means for informing the Node-Bs that the particular Node-B has been designated as a primary Node-B.

29. The IC of claim 28 wherein the IC is integrated with a radio network controller (RNC) that controls the plurality of Node-Bs.

ABSTRACT

A wireless communication method and apparatus for coordinating Node-Bs during handover for enhanced uplink (EU) transmission. In one embodiment, a radio network controller (RNC) initiates an inter-Node-B soft handover. A wireless transmit/receive unit (WTRU) establishes communication connections with a plurality of Node-Bs. A particular one of the Node-Bs is designated as being a primary Node-B, and each of other Node-Bs are designated as being a non-primary Node-B. The RNC informs all of the Node-Bs that the particular Node-B is a primary Node-B. The primary Node-B schedules EU transmission and performs ACK/NACK during soft handover. In another embodiment, the RNC initiates a hard handover for a WTRU connected to a source Node-B. The RNC sends an activation timer to the source Node-B to set the time for handover. As many previously negatively acknowledged (NACKed) data packets as possible are prioritized for retransmission in the source Node-B before the activation timer expires.

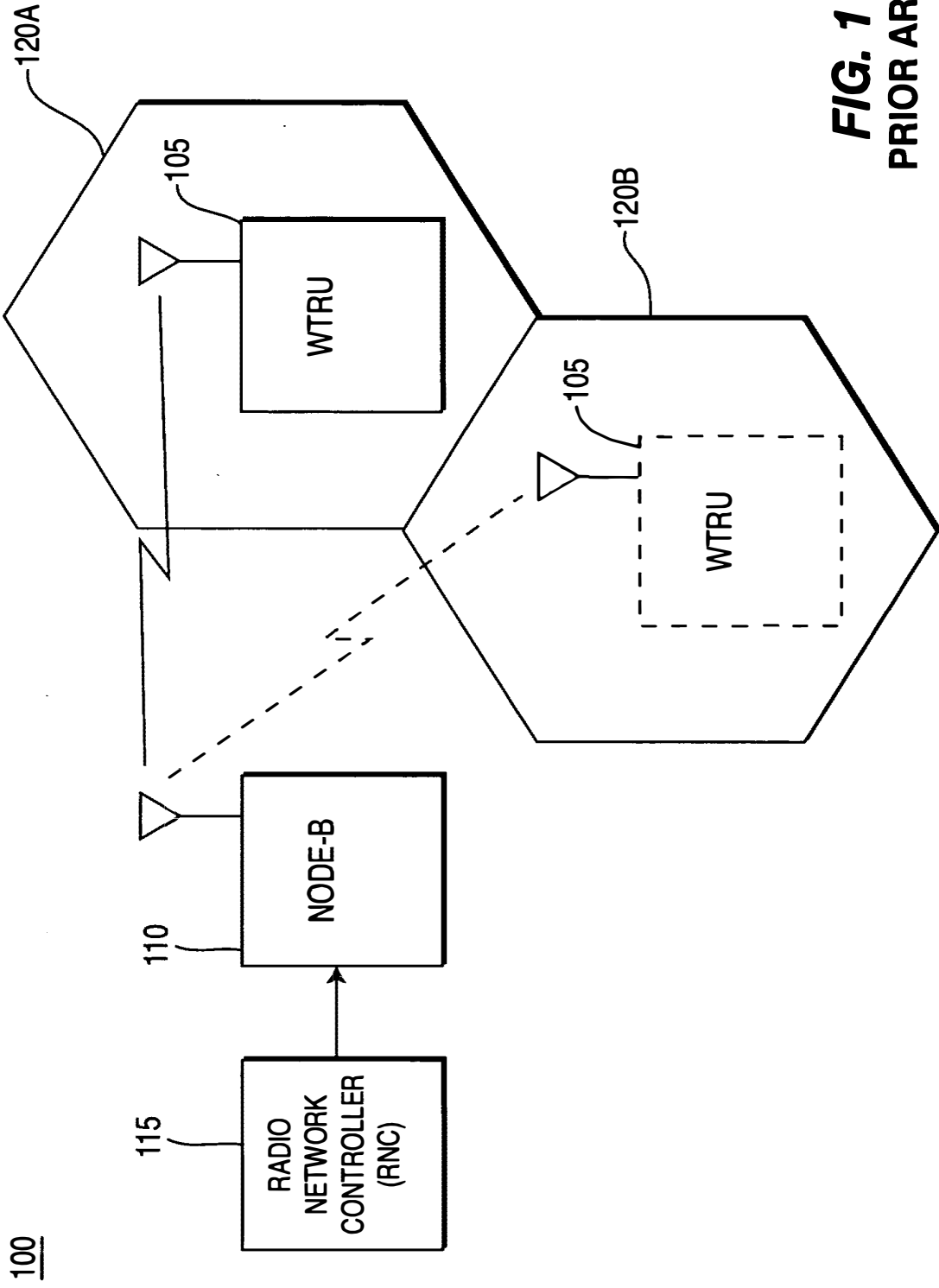
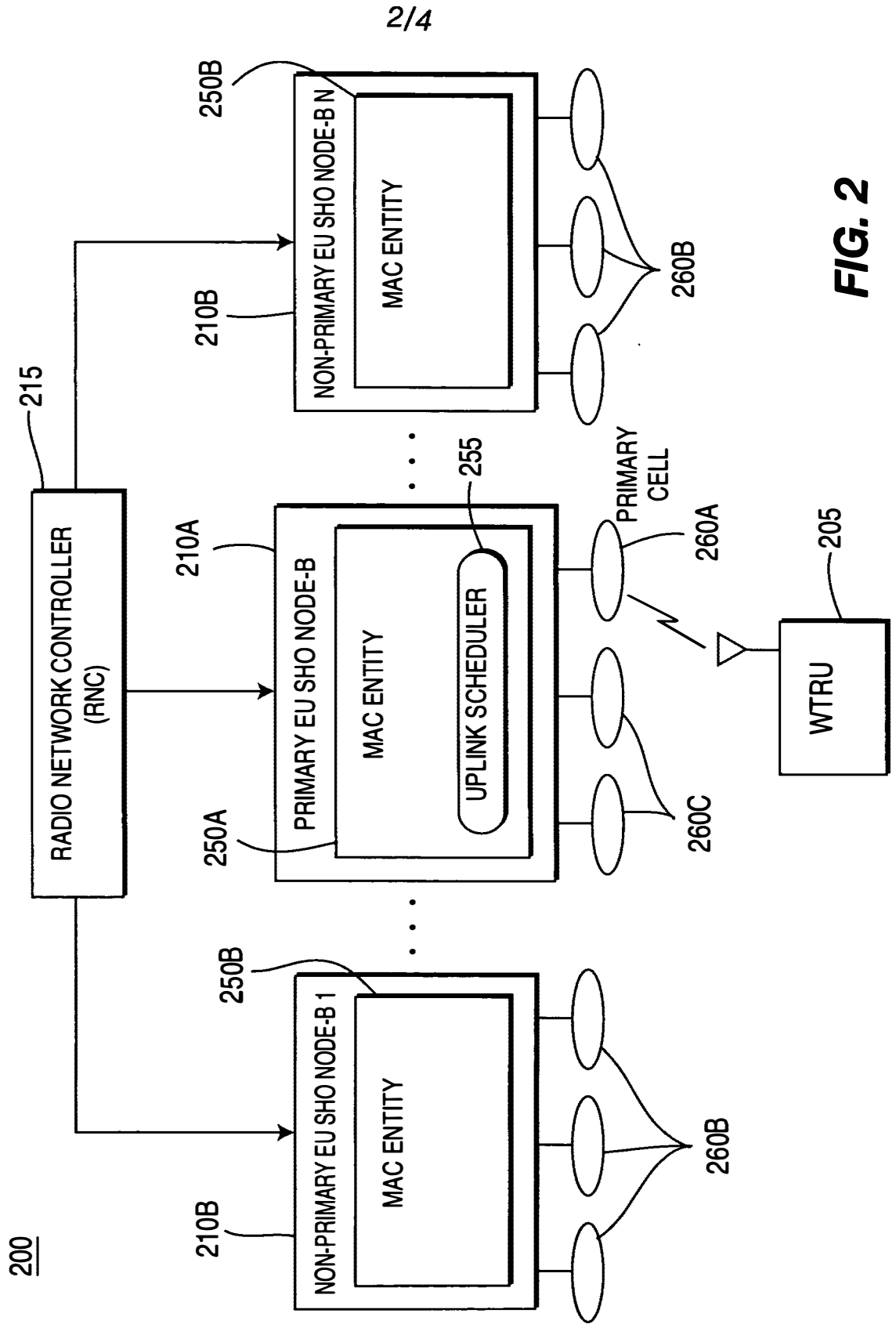


FIG. 1
PRIOR ART

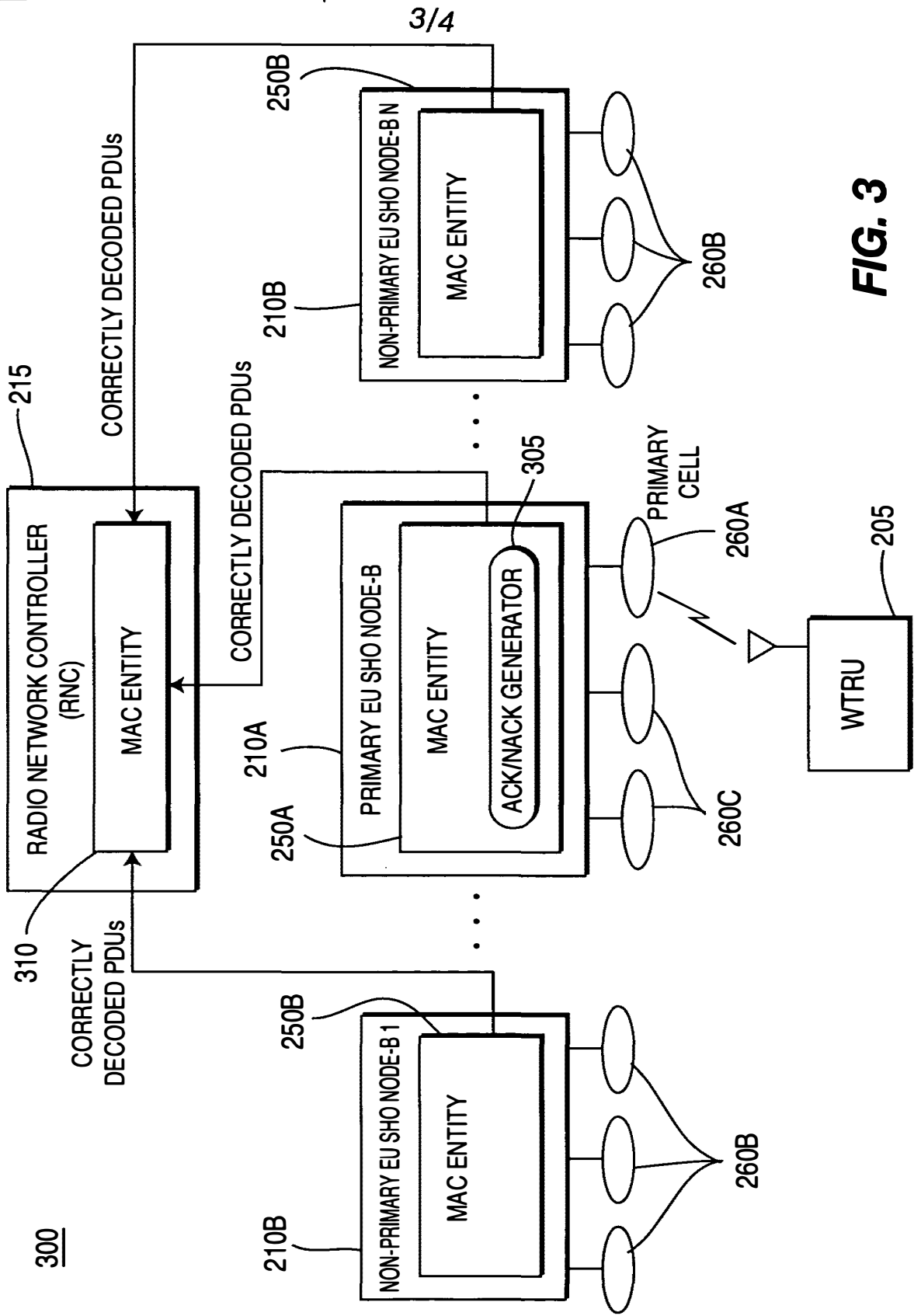




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FIG. 2





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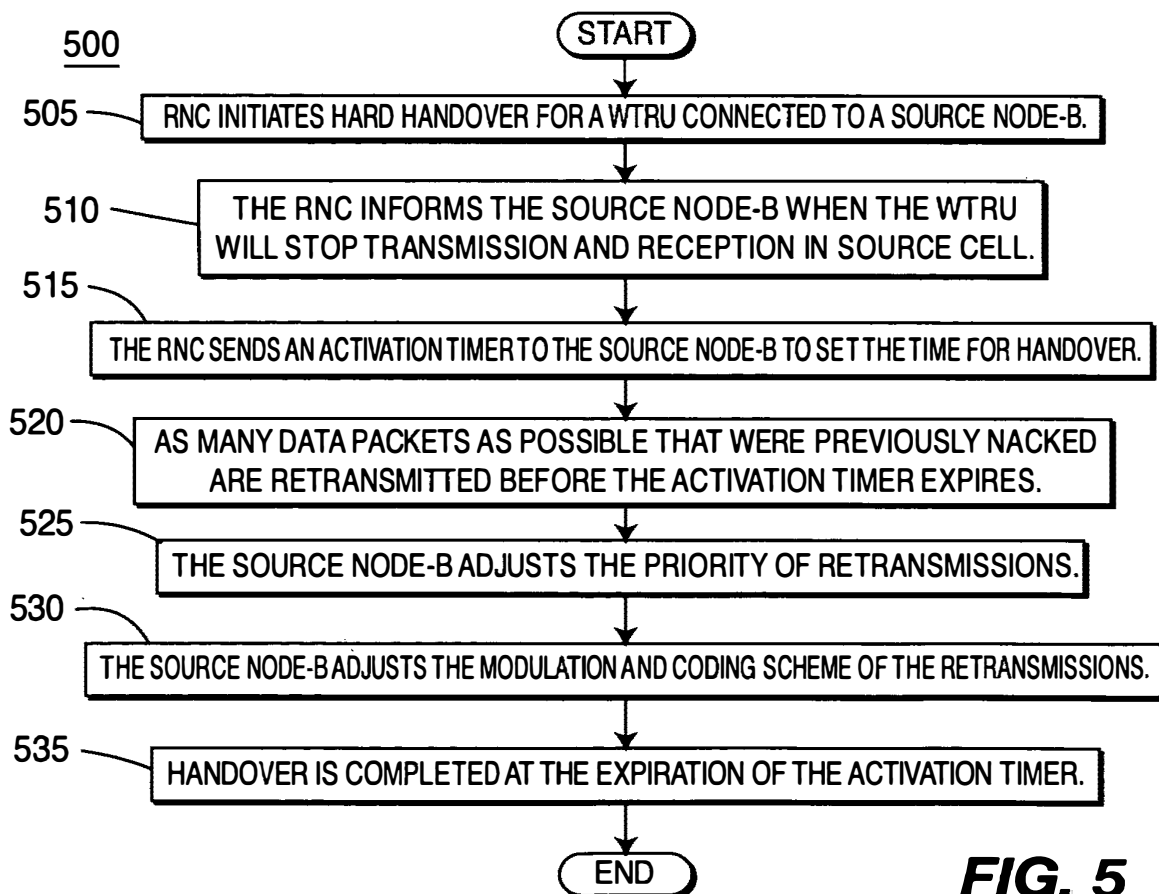
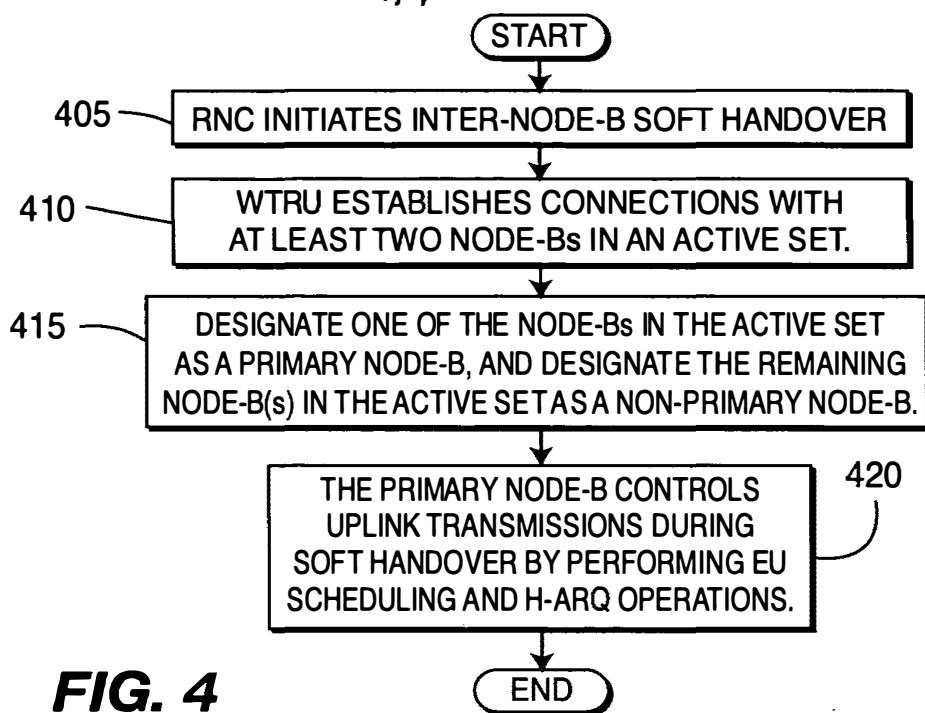
FIG. 3



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DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63) ☒ Declaration Submitted with Initial Filing OR ☐ Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)	Attorney Docket Number	I-2-0674.1US
	First Named Inventor	Zhang et al.
	COMPLETE IF KNOWN	
	Application Number	Not Yet Known
	Filing Date	Not Yet Known
	Group Art Unit	Not Yet Known
Examiner Name	Not Yet Known	

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

WIRELESS COMMUNICATION METHOD AND APPARATUS FOR COORDINATING NODE-B'S AND SUPPORTING ENHANCED UPLINK TRANSMISSIONS DURING HANDOVER

the specification of which (Title of the Invention)

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I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

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I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)
60/517,656	11/5/2003
60/519,990	11/14/2003
60/520,692	11/17/2003
60/578,674	06/10/2004

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[Page 1 of 4]

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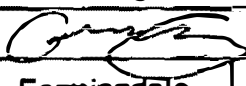
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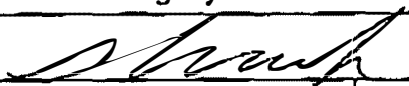
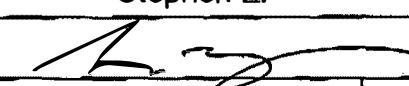
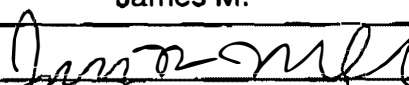
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Supplemental Sheet
Page 3 of 4

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Residence: City		State	
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03 FC:1201	352.00 DA

PTO-1556
(5/87)

PATENT APPLICATION FEE DETERMINATION RECORD

Effective October 1, 2004

Application or Docket Number

1096272D

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	29	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	29 minus 20 =	*9
INDEPENDENT CLAIMS	7 minus 3 =	*4
MULTIPLE DEPENDENT CLAIM PRESENT ☐		

SMALL ENTITY TYPE ☐

OR OTHER THAN SMALL ENTITY

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BASIC FEE	395.00
X\$ 9=	
X44=	
+150=	
TOTAL	

RATE	FEE
BASIC FEE	790.00
X\$18=	16.2
X88=	352
+300=	
TOTAL	1304

* If the difference in column 1 is less than zero, enter "0" in column 2

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	(Column 1)	(Column 2)	(Column 3)
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Independent	*	Minus	***
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

SMALL ENTITY OR

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X\$ 9=	
X44=	
+150=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X88=	
+300=	
TOTAL ADDIT. FEE	

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AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus	**
Independent	*	Minus	***
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

RATE	ADDITIONAL FEE
X\$ 9=	
X44=	
+150=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X88=	
+300=	
TOTAL ADDIT. FEE	

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus	**
Independent	*	Minus	***
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

RATE	ADDITIONAL FEE
X\$ 9=	
X44=	
+150=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X88=	
+300=	
TOTAL ADDIT. FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."

***If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

**APPLICATION DATA SHEET
UNDER 37 CFR §1.76**

(1) Inventor Information

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Family Name:: Zhang
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Citizenship Country:: United States of America
Residence:: Nesconset, New York, U.S.A.

(2) Assignee Information

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State or Province:: Delaware, U.S.A.
Postal or ZIP Code:: 19801

(3) Correspondence Information

Customer No.: 24374
Name Line One:: Scott Wolinsky
Name Line Two:: Volpe and Koenig, P.C., DEPT ICC
Telephone No.: 215-568-6400

(4) Application Information

Title Line One:: WIRELESS COMMUNICATION METHOD AND
Title Line Two:: APPARATUS FOR COORDINATING NODE-B'S
Title Line Three:: AND SUPPORTING ENHANCED UPLINK
Title Line Four:: TRANSMISSIONS DURING HANDOVER
Total Drawing Sheets:: Four (4)
Drawing Type:: Formal
Application Type:: Utility
Docket No.: I-2-0674.1US

(5) Representative Information

Representative Customer No.: 24374

(6) Domestic Priority Information

This application is a:: Non Prov. of Provisional
Application One:: 60/517,656
Filing Date:: November 5, 2003

This application is a:: Non Prov. of Provisional
Application One:: 60/519,990
Filing Date:: November 14, 2003

This application is a:: Non Prov. of Provisional
Application One:: 60/520,692
Filing Date:: November 17, 2003

This application is a:: Non Prov. of Provisional
Application One:: 60/578,674
Filing Date:: June 10, 2004

Approved for use through 07/31/2006.

U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

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UTILITY
PATENT APPLICATION
TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.

I-2-0674.1US

First Inventor

Zhang et al.

Title

WIRELESS COMMUNICATION METHOD AND...

Express Mail Label No.

EV441644862US

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☒ **Fee Transmittal Form** (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
2. ☐ **Applicant claims small entity status.**
See 37 CFR 1.27.
3. ☒ **Specification** [Total Pages 19]
Both the claims and abstract must start on a new page
(For information on the preferred arrangement, see MPEP 608.01(e))
4. ☒ **Drawing(s)** (35 U.S.C. 113) [Total Sheets 4]
5. **Oath or Declaration** [Total Sheets 4]
a. ☒ Newly executed (original or copy)
b. ☐ A copy from a prior application (37 CFR 1.63(d))
(for continuation/divisional with Box 18 completed)
i. ☐ **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s)
name in the prior application, see 37 CFR
1.63(d)(2) and 1.33(b).
6. ☒ **Application Data Sheet.** See 37 CFR 1.76
7. ☐ **CD-ROM or CD-R** in duplicate, large table or
Computer Program (Appendix)
☐ Landscape Table on CD
8. **Nucleotide and/or Amino Acid Sequence Submission**
(if applicable, items a. - c. are required)
a. ☐ Computer Readable Form (CRF)
b. ☐ Specification Sequence Listing on:
i. ☐ CD-ROM or CD-R (2 copies); or
ii. ☐ Paper
c. ☐ Statements verifying identity of above copies

ADDRESS TO:

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

ACCOMPANYING APPLICATION PARTS

9. ☐ **Assignment Papers** (cover sheet & document(s))
Name of Assignee _____
10. ☐ **37 CFR 3.73(b) Statement** ☐ **Power of Attorney**
(when there is an assignee)
11. ☐ **English Translation Document** (if applicable)
12. ☐ **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)
☐ Copies of citations attached
13. ☐ **Preliminary Amendment**
14. ☒ **Return Receipt Postcard** (MPEP 503)
(Should be specifically itemized)
15. ☐ **Certified Copy of Priority Document(s)**
(if foreign priority is claimed)
16. ☐ **Nonpublication Request** under 35 U.S.C. 122(b)(2)(B)(i).
Applicant must attach form PTO/SB/35 or equivalent.
17. ☐ **Other:** _____

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title, or in an Application Data Sheet under 37 CFR 1.76:

☐ Continuation☐ Divisional☐ Continuation-in-part (CIP)

of prior application No.: _____

Prior application information:

Examiner _____

Art Unit: _____

19. CORRESPONDENCE ADDRESS



The address associated with Customer Number:

24374

OR



Correspondence address below

Name

VOLPE AND KOENIG, P.C., DEPT ICC

Address

City

State

Zip Code

Country

Telephone

Fax

Signature

Scott Wolinsky

Date

October 12, 2004

Name
(Print/Type)

Scott Wolinsky

Registration No.
(Attorney/Agent)

46,413

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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FEE TRANSMITTAL
for FY 2005

Effective 10/01/2004. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27**TOTAL AMOUNT OF PAYMENT** (\$1,304.00)**Complete if Known**

Application Number	Not Yet Known
Filing Date	Not Yet Known
First Named Inventor	Zhang et al.
Examiner Name	Not Yet Known
Art Unit	Not Yet Known
Attorney Docket No.	I-2-0674.1US

METHOD OF PAYMENT (check all that apply)☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None☒ Deposit Account:

Deposit Account Number	09-0435
Deposit Account Name	InterDigital Communications Corporation

The Director is authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☒ Credit any overpayments☒ Charge any additional fee(s) or any underpayment of fee(s)☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.**FEE CALCULATION****1. BASIC FILING FEE**

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1001 790	2001 395	Utility filing fee	790.00
1002 350	2002 175	Design filing fee	
1003 550	2003 275	Plant filing fee	
1004 790	2004 395	Reissue filing fee	
1005 160	2005 80	Provisional filing fee	
SUBTOTAL (1)			(\$ 790.00)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims	Extra Claims	Fee from below	Fee Paid
29	20	9	18.00
7	3	4	88.00
			352.00

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	
1202 18	2202 9	Claims in excess of 20	
1201 88	2201 44	Independent claims in excess of 3	
1203 300	2203 150	Multiple dependent claim, if not paid	
1204 88	2204 44	** Reissue independent claims over original patent	
1205 18	2205 9	** Reissue claims in excess of 20 and over original patent	
SUBTOTAL (2)			(\$ 514.00)

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)**3. ADDITIONAL FEES**

Large Entity Small Entity

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1051 130	2051 65	Surcharge - late filing fee or oath	
1052 50	2052 25	Surcharge - late provisional filing fee or cover sheet	
1053 130	1053 130	Non-English specification	
1812 2,520	1812 2,520	For filing a request for ex parte reexamination	
1804 920*	1804 920*	Requesting publication of SIR prior to Examiner action	
1805 1,840*	1805 1,840*	Requesting publication of SIR after Examiner action	
1251 110	2251 55	Extension for reply within first month	
1252 430	2252 215	Extension for reply within second month	
1253 980	2253 490	Extension for reply within third month	
1254 1,530	2254 765	Extension for reply within fourth month	
1255 2,080	2255 1,040	Extension for reply within fifth month	
1401 340	2401 170	Notice of Appeal	
1402 340	2402 170	Filing a brief in support of an appeal	
1403 300	2403 150	Request for oral hearing	
1451 1,510	1451 1,510	Petition to institute a public use proceeding	
1452 110	2452 55	Petition to revive - unavoidable	
1453 1,330	2453 665	Petition to revive - unintentional	
1501 1,370	2501 685	Utility issue fee (or reissue)	
1502 490	2502 245	Design issue fee	
1503 660	2503 330	Plant issue fee	
1460 130	1460 130	Petitions to the Commissioner	
1807 50	1807 50	Processing fee under 37 CFR 1.17(q)	
1806 180	1806 180	Submission of Information Disclosure Stmt	
8021 40	8021 40	Recording each patent assignment per property (times number of properties)	
1809 790	2809 395	Filing a submission after final rejection (37 CFR 1.129(a))	
1810 790	2810 395	For each additional invention to be examined (37 CFR 1.129(b))	
1801 790	2801 395	Request for Continued Examination (RCE)	
1802 900	1802 900	Request for expedited examination of a design application	

Other fee (specify)

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$ 0.00)**SUBMITTED BY**

(Complete if applicable)

Name (Print/Type)	Scott Wolinsky	Registration No. (Attorney/Agent)	46,413	Telephone	215-568-6400
Signature	<i>Scott Wolinsky</i>	Date	October 12, 2004		

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

This collection of information is required by 37 CFR 1.17 and 1.27. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S8	34	Node-B and RNC and (H-ARQ or HARQ)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/16 14:31
S10	15	Node-B and scheduler and (H-ARQ or HARQ) and ACK and NACK	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/17 11:47
S14	34	Node-B and (soft adj handoff)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/16 18:39
S20	22	hard adj handover and Node-B	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/17 11:55
S37	125	first with ((Node adj B) or (Node-B)) and (handover or handoff) and RNC	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/17 14:47
S51	263	Node-B and RNC	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/17 19:00
S58	191	(primary with (base adj station)) and (secondary with (base adj station)) and (handover or handoff)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/05/18 13:38



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/962,720	10/12/2004	Guodong Zhang	I-2-0674.1US	9856
24374	7590	06/01/2005	EXAMINER	
VOLPE AND KOENIG, P.C. DEPT. ICC UNITED PLAZA, SUITE 1600 30 SOUTH 17TH STREET PHILADELPHIA, PA 19103			ROBERTS, BRIAN S	
			ART UNIT	PAPER NUMBER
			2662	

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/962,720	ZHANG ET AL.	
	Examiner	Art Unit	
	Brian Roberts	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 12 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) ☒ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413) |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) ☐ Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) ☐ Other: _____ |

Art Unit: 2662

Claims 1-29 have been examined.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 14 is rejected under 35 U.S.C. 102(e) as being anticipated by Kolding et al.

- In reference to claim 14

In Figures 1 and 2, Kolding et al teaches a system and method of handover comprising:

- The RNC initiating a handover for the Mobile Terminal connected to the 1st Node B [0007] [0052]
- The RNC informing the 1st Node B when the Mobile Terminal will stop transmission and reception while being connected to the 1st Node B [0052-0053]
- The Node B sends the timer values of the data blocks to the 1st Node B [0053]

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10, 17-24, and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Love et al. (US 2004/0219917 A1) in view of Smee et al. (US 2005/0083888 A1)

- In reference to claims 1, 17, 23, 24, 27, 28, and 29

Love et al. teaches a system and method of handover in a wireless multi-cell communications system that includes:

- In Figure 2, the RNC (110) initiating an inter-BTS or inter-Node-B soft handover (214) and in control of the scheduling and control functions of the Node-Bs [0013]
- The Mobile Station establishing a communication connection with at least two BTSs [0013]
- In Figure 3, A plurality of Node-Bs (301-307) each containing an ARQ and Scheduler (316)

Love et al. does not explicitly teach

- Designating a particular one of the Node-Bs as a primary Node-B
- Designating the other one(s) of the Node-Bs as a non-primary Node-B

Art Unit: 2662

- The RNC informing the Node-Bs that the particular Node-B is a primary Node-B

Smee et al. teaches a system and method that includes a plurality of BTSs (110), an RNC (102) and a terminal (120) and a method where:

- The BTSs that receive a reverse link pilot signal from a terminal and jointly determine which BTS should serve (primary) the terminal. The remaining BTSs are non-serving (non-primary). The BTSs inherently know the serving (primary) BTS because it was determined jointly. [0039-0042]

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system and method of Love et al. to include the intelligent BTSs of Smee et al. so that the RNC informs the Node-Bs that a particular Node-B is a primary Node-B, where the primary Node-B contains a scheduler and ARQ (Figure 3), because it would allow the primary Node-B to control scheduling and allow the non-primary Node-Bs to communicate feedback to the primary Node-B to improve the signal quality and diminish the interference between the WTRU and the Node-Bs.

- In reference to claims 2, 3, 18, and 19

Love et al. teaches a system and method that covers substantially all limitations of the parent claims. In Figure 3, Love et al further teaches a system and method where each BTS includes a scheduler that schedules the UL transmission originating from the Mobile Station during soft handover. [0016]

Art Unit: 2662

- In reference to claims 4, 5, 20, and 21

Love et al. teaches a system and method that covers substantially all limitations of the parent claims. Love et al further teaches the RNC receiving frame quality information (physical measurement information) from the Node-Bs and considering the information when scheduling the UL transmission. The RNC then transmits the scheduling information to the BTS and the MS. [0015]

Love et al does not teach a primary Node-B receiving physical measurement information regarding the non-primary Node-Bs and considering the information when scheduling the UL transmission.

Smee et al. teaches a system and method that includes a plurality of BTSs (110), an RNC (102) and a terminal (120) and a method where:

- The BTSs that receive a reverse link pilot signal from a terminal and jointly determine which BTS should serve (primary) the terminal. The remaining BTSs are non-serving (non-primary). [0039-0042]

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system and method of Love et al. to include the BTSs jointly communicating with each other because it allows the non-primary Node-Bs to send physical measurement information to the primary Node-B when scheduling the UL transmission and the primary Node-B to send control information to the Mobile Station and the non-primary BTSs to improve the signal quality and diminish the interference between the WTRU and the Node-Bs.

- In reference to claim 6, 7, and 22

Love et al. teaches a system and method that covers substantially all limitations of the parent claims. Love et al. further teaches a system and method of handoff and scheduling functions by allowing a mobile station to provide HARQ ACK/NAK coding information to improve data throughput of an enhanced reverse link transmission to Active Set base transceiver stations (BTS) and allowing the BTSs to perform control functions. [0038] Love et al. further teaches the use of synchronous and non-synchronous communications between the Node-B and the MS [0008-0009]

- In reference to claim 8

Love et al. teaches a system and method that covers substantially all limitations of the parent claims. In Figure 2, Love et al. further teaches a system and method where a set of BTSs (201,203, 204) receive a transmission from a MS (114) and demodulate and decodes the contents of the received radio frame along with related frame quality information, and then conveys the demodulated and decoded radio frame along with the related frame quality information to the RNC (110). [0014-0015] [0037]

- In reference to claims 9 and 10

Love et al. teaches a system and method that covers substantially all limitations of the parent claims.

Love et al. does not teach the primary Node-B selected by the WTRU based on the downlink pilot power received from the Node-Bs.

In Figure 2, Smee et al. teaches a terminal selects a primary base station from a plurality of base stations based on the measured power received from the plurality of BTSs.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system and method of Love et al. to include the primary BTS being selected by the terminal based on the measured power received from the plurality of BTSs because it allows for the terminal to connect to the BTS that has the best signal quality.

Claims 11, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Love et al. (US 2004/0219917 A1) in view of Smee et al. (US 2005/0083888 A1), as applied to the parent claims, and further in view of Park et al. (US 6892071 B2)

- In reference to claims 11, 12, and 13

The combination of Love et al. and Smee et al. teaches a system and method that covers substantially all limitations of the parent claims.

The combination of Love et al. and Smee et al. do not teach a system and method where the primary node is selected by the RNC based on a report generated by the Mobile Station.

Park et al. teaches a system and method where the MS measures power intensities of pilot signals for a current service cell and adjacent cells, and report measurement results to the source RNC by transmitting a measurement result report

Art Unit: 2662

message. RNC then uses the report to determine whether to perform handover, which involves selecting a primary Node-B. (column 2 lines 39-44) (column 7 lines 17-21)

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system and method of the combination of Love et al. and Smee et al. to include the MS generated reports as taught by Park et al. because it allows for the RNC to intelligently select the Node-B and establish the connection with the best signal quality between the MS and the network.

Claims 15 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kolding et al. (US 2004/0202129 A1) in view of Love et al. (US 2004/0219917 A1), as applied to the parent claims, and further in view of Cheng et al (US 2004/0228313 A1).

- In reference to claims 15 and 25

Kolding et al. teaches a system and method that covers substantially all limitations of the parent claims.

Kolding et al. does not teach the source Node-B determining whether there were any previously transmitted data packets that were negatively acknowledged by the source Node-B.

Love et al. teaches a system and method that includes acknowledge/no acknowledged (ACK/NACK) feedback for communications between the Node-B and UE during handover. [0038]

Art Unit: 2662

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system and method of Kolding et al. to include the system and method of (ACK/NACK) as taught by Love et al. so that data packets that were not successfully transmitted can be retransmitted in order to improve the efficiency of the transmission system.

The combination of Kolding et al. and Love et al. teaches a system and method that covers substantially all limitations of the parent claims.

The combination of Kolding et al. and Love et al. does not teach the source Node-B adjusting the priority of data packets transmissions sent by the WTRU.

Cheng et al. teaches transmitting data according to the transmission parameters that may include class priority of a service class of data that is to be transmitted. [0028]

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system and method of the combination of Kolding et al. and Love et al. to include the transmission of data according to the priority level as taught by Cheng et al. because it allows solely for the retransmission of the class containing the data packets that were previously NACKed so that as many previously NACKed data packets can be transmitted before handover occurs.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kolding et al. (US 2004/0202129 A1) in view of Love et al. (US 2004/0219917 A1), as applied to the parent claims, and further in view of Kwan et al. (US 2003/0081692 A1)

- In reference to claim 16

Kolding et al. teaches a system and method that covers substantially all limitations of the parent claims.

Kolding et al. does not teach the source Node-B determining whether there were any previously transmitted data packets that were negatively acknowledged by the source Node-B.

Love et al. teaches a system and method that includes acknowledge/no acknowledged (ACK/NACK) feedback for communications between the Node-B and UE during handover. [0038]

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system and method of Kolding et al. to include the method of (ACK/NACK) as taught by Love et al. so that data packets that were not successfully transmitted can be retransmitted in order to improve the efficiency of the transmission system.

The combination of Kolding et al. and Love et al. teaches a system and method that covers substantially all limitations of the parent claims.

The combination of Kolding et al. and Love et al. does not teach the source Node-B adjusting a MCS used for data packet retransmissions sent by the WTRU.

Kwan et al. teaches the optimization of a MCS by the Node-B for transmission of data packets between a Node-B and a UE. (abstract)

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system and method of the combination of Kolding et al. and Love et al. to include the system and method of optimization of the MCS by the Node-B

Art Unit: 2662

for transmission of data packets between a Node-B and UE because it allows for the UE to receive the maximum amount of data packets that were NACKed before handover occurs.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kolding et al. (US 2004/0202129 A1) in view of Love et al. (US 2004/0219917 A1), as applied to the parent claims, and further in view of Cheng et al (US 2004/0228313 A1) and further in view Kwan et al. (US 2003/0081692 A1)

Kolding et al. teaches a system and method that covers substantially all limitations of the parent claims.

Kolding et al. does not teach the source Node-B determining whether there were any previously transmitted data packets that were negatively acknowledged by the source Node-B.

Love et al. teaches a system and method that includes acknowledge/no acknowledged (ACK/NACK) feedback for communications between the Node-B and UE during handover. [0038]

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system and method of Kolding et al. to include the system and method of (ACK/NACK) as taught by Love et al. so that data packets that were not successfully transmitted can be retransmitted in order to improve the efficiency of the transmission system.

The combination of Kolding et al. and Love et al. teaches a system and method that covers substantially all limitations of the parent claims.

The combination of Kolding et al. and Love et al. does not teach the source Node-B adjusting the priority of data packets transmissions sent by the WTRU.

Cheng et al. teaches transmitting data according to the transmission parameters that may include class priority of a service class of data that is to be transmitted. [0028]

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system and method of the combination of Kolding et al. and Love et al. to include the transmission of data according to the priority level as taught by Cheng et al. because it allows solely for the retransmission of the class containing the data packets that were previously NACKed so that as many previously NACKed data packets can be transmitted before handover occurs.

The combination of Kolding et al., Love et al., and Cheng et al. teaches a system and method that covers substantially all limitations of the parent claims.

The combination of Kolding et al., Love et al., and Cheng et al. does not teach the source Node-B adjusting a MCS used for data packet retransmissions sent by the WTRU.

Kwan et al. teaches the optimization of a MCS by the Node-B for transmission of data packets between a Node-B and a UE. (abstract)

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system and method of the combination of Kolding et al., Love et al., and Cheng et al. to include the system and method of optimization of the

MCS by the Node-B for transmission of data packets between a Node-B and UE because it allows for the UE to receive the maximum amount of data packets that were NACKed before handover occurs.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure are:

- Love et al. (US 2004/0219920 A1) teaches a method for rate selection by a communication device for enhanced uplink during soft handover.
- Zeira et al. (US 2005/0047354 A1) teaches a method of using a mobile unit to determine whether to commence handover
- Cao et al. (US 2004/0072567 A1) teaches a method of selecting cells of base stations for soft-handover.
- Malladi et al. (US 2003/0210668 A1) teaches a method of mitigation of link imbalance in a wireless communication system with Node-Bs and an RNC.
- Liu (US 2005/0048920 A1) teaches a method of control signaling in a wireless communications network.
- Balachandran et al. teaches method of flexible transmission involving HARQ and AMC.
- Liu (US 2005/0041694 A1) teaches a method of transmitting control signals for uplink transmissions in a communication system with a plurality of Node-Bs, UEs, and RNCs.

- Chen (US 2003/0161284 A1) teaches a method of soft handover in a UMTS network.
- Chen et al. (US 2004/0203991 A1) teaches power control in a wireless network with a primary Base Station and secondary Base Stations.
- Whinnett et al. (US 2004/0219919) teaches a method of management of uplink scheduling modes in a wireless communication system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Roberts whose telephone number is (571) 272-3095. The examiner can normally be reached on M-F 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BSR



HASSAN KIZOU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Notice of References Cited	Application/Control No. 10/962,720	Applicant(s)/Patent Under Reexamination ZHANG ET AL.	
	Examiner Brian Roberts	Art Unit 2662	Page 1 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-2004/0219917	11-2004	Love et al.	455/436
	B	US-6,892,071	05-2005	Park et al.	455/436
	C	US-2004/0202129	10-2004	Kolding et al.	370/331
	D	US-2003/0081692	05-2003	Kwan et al.	375/295
	E	US-2004/0228313	11-2004	Cheng et al.	370/342
	F	US-2005/0083888	04-2005	Smee et al.	370/332
	G	US-2004/0219919	11-2004	Whinnett et al.	455/442
	H	US-2004/0203991	10-2004	Chen et al.	455/522
	I	US-2003/0161284	08-2003	Chen, Xiaobao X	370/331
	J	US-2005/0041694	02-2005	Liu, Jung-Tao	370/524
	K	US-2004/0085934	05-2004	Balachandran et al.	370/335
	L	US-2005/0048920	03-2005	Liu, Jung-Tao	455/063.1
	M	US-2003/0210668	11-2003	Malladi et al.	370/335

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 10/962,720	Applicant(s)/Patent Under Reexamination ZHANG ET AL.	
	Examiner Brian Roberts	Art Unit 2662	Page 2 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code.	Date MM-YYYY	Name	Classification
	A	US-2004/0072567	04-2004	Cao et al.	455/442
	B	US-2005/0047354	03-2005	Zeira et al.	370/280
	C	US-			
	D	US-			
	E	US-			
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FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims



Application/Control No.

10/962,720

Examiner

Brian Roberts

Applicant(s)/Patent under
Reexamination

ZHANG ET AL.

Art Unit

2662

✓	Rejected
=	Allowed

—	(Through numeral) Cancelled
+	Restricted

N	Non-Elected
I	Interference

A	Appeal
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Claim		Date			
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Search Notes

Application/Control No.

10/962,720

Examiner

Brian Roberts

Applicant(s)/Patent under
Reexamination

ZHANG ET AL.

Art Unit

2662

SEARCHED

Class	Subclass	Date	Examiner
370	278	5/16/2005	BSR
370	282	5/16/2005	
370	331	5/16/2005	
370	332	5/16/2005	
370	329	5/16/2005	
455	436	5/17/2005	
455	438	5/17/2005	
455	439	5/17/2005	
455	442	5/17/2005	
709	208	5/18/2005	BSR

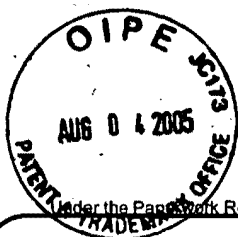
INTERFERENCE SEARCHED

Class	Subclass	Date	Examiner

**SEARCH NOTES
(INCLUDING SEARCH STRATEGY)**

	DATE	EXMR
Consulted with Examiner Greg Selfcheck to search: 370/278,282,331,332,329 455/436,438,439,442 709/208	5/16/2005	BSR

IFW



PTO/SB/21 (04-04)
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TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	10/962,720
	Filing Date	October 12, 2004
	First Named Inventor	Zhang et al.
	Art Unit	2662
	Examiner Name	Brian S. Roberts
Total Number of Pages in This Submission	Attorney Docket Number	I-2-0674.1US

ENCLOSURES (Check all that apply)		
☐ Fee Transmittal Form	☐ Drawing(s)	☐ After Allowance communication to Technology Center (TC)
☐ Fee Attached	☐ Licensing-related Papers	☐ Appeal Communication to Board of Appeals and Interferences
☐ Amendment/Reply	☐ Petition	☐ Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
☐ After Final	☐ Petition to Convert to a Provisional Application	☐ Proprietary Information
☐ Affidavits/declaration(s)	☐ Power of Attorney, Revocation Change of Correspondence Address	☐ Status Letter
☐ Extension of Time Request	☐ Terminal Disclaimer	☒ Other Enclosure(s) (please identify below):
☐ Express Abandonment Request	☐ Request for Refund	Form PTO-1449 with a copy of the International Search Report
☒ Information Disclosure Statement	☐ CD, Number of CD(s) _____	
☐ Certified Copy of Priority Document(s)	Remarks	
☐ Response to Missing Parts/Incomplete Application		
☐ Response to Missing Parts under 37 CFR 1.52 or 1.53		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	Scott Wolinsky Reg. No. 46,413
Signature	<i>Scott Wolinsky</i>
Date	August 2, 2005

CERTIFICATE OF TRANSMISSION/MAILING	
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.	
Typed or printed name	Scott Wolinsky
Signature	<i>Scott Wolinsky</i>
Date	August 2, 2005

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:

Zhang et al.

Application No.: 10/962,720

Confirmation No.: 9856

Filed: October 12, 2004

For: WIRELESS COMMUNICATION
METHOD AND APPARATUS FOR
COORDINATING NODE-B'S AND
SUPPORTING ENHANCED UPLINK
TRANSMISSIONS DURING HANDOVER

Group: 2662

Examiner: Brian S. Roberts

Our File: I-2-0674.1US

Date: August 2, 2005

INFORMATION DISCLOSURE STATEMENT

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

Sir:

Further to Applicants' Duty of Disclosure pursuant to 37 C.F.R. §1.56, the Applicants wish to bring to the Examiner's attention the material cited on the enclosed PTO-1449 form. A newly cited document is indicated by an asterisk (*).

Pursuant to 37 C.F.R. §1.98(a)(2)(ii), copies of the newly cited document and previously cited U.S. publications and/or patent documents have not been provided.

Pursuant to 37 C.F.R. § 1.97(e)(1), the undersigned certifies that each new item of information contained in this Information Disclosure Statement was cited in an

International Search Report, copy enclosed, from a foreign patent office, the United States Patent and Trademark Office acting as ISA in a corresponding International Application, and that this communication was not received by any individual designated in §1.56(c) more than three (3) months prior to the filing of the information disclosure statement.

It is respectfully requested that the Examiner consider the publications and/or patent documents cited on the enclosed PTO-1449 form and return an initialed copy of the PTO-1449 form indicating that all of the cited publications and/or patent documents have been considered.

Respectfully submitted,

Zhang et al.

By Scott Wolinsky
Scott Wolinsky
Registration No. 46,413
(215) 568-6400

Volpe and Koenig, P.C.
United Plaza, Suite 1600
30 South 17th Street
Philadelphia, PA 19103

SW/ks
Enclosures (2)

FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)				ATTY. DOCKET NO. I-2-0674.1US		SERIAL NO. 10/962,720	
				APPLICANT Zhang et al.			
				FILING DATE October 12, 2004		GROUP 2662	

OPEN
 AUG 10 2005
 PATENT & TRADEMARK OFFICE

U.S. PATENT DOCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
		6,892,071	05/2005	Park et al.			
		2003/0081692	05/2003	Kwan et al.			
		2003/0161284	08/2003	Chen			
		2003/0210668	11/2003	Malladi et al.			
		2004/0072567	04/2004	Cao et al.			
		2004/0085934	05/2004	Balachandran et al.			
		2004/0202129	10/2004	Kolding et al.			
		2004/0203991	10/2004	Chen et al.			
		2004/0219917	11/2004	Love et al.			
		2004/0219919	11/2004	Whinnett et al.			
	*	2004/0219920	11/2004	Love et al.			
		2004/0228313	11/2004	Cheng et al.			
		2005/0041694	02/2005	Liu			
		2005/0047354	03/2005	Zeira et al.			
		2005/0048920	03/2005	Liu			
		2005/0083888	04/2005	Smee et al.			

FOREIGN PATENT DOCUMENTS								
		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)		

EXAMINER	DATE CONSIDERED
----------	-----------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



PTO/SB/21 (09-04)

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**TRANSMITTAL
FORM**

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

Application Number	10/962,720
Filing Date	October 12, 2004
First Named Inventor	Zhang et al.
Art Unit	2662
Examiner Name	Brian S. Roberts
Attorney Docket Number	I-2-0674.1US

ENCLOSURES (Check all that apply)

- | | | |
|---|--|---|
| ☐ Fee Transmittal Form
☐ Fee Attached
☒ Amendment/Reply
☐ After Final
☐ Affidavits/declaration(s)
☐ Extension of Time Request
☐ Express Abandonment Request
☐ Information Disclosure Statement

☐ Certified Copy of Priority Document(s)
☐ Reply to Missing Parts/
Incomplete Application
☐ Reply to Missing Parts
under 37 CFR 1.52 or 1.53 | ☐ Drawing(s)
☐ Licensing-related Papers

☐ Petition
☐ Petition to Convert to a
Provisional Application
☐ Power of Attorney, Revocation
Change of Correspondence Address

☐ Terminal Disclaimer
☐ Request for Refund

☐ CD, Number of CD(s) _____
☐ Landscape Table on CD | ☐ After Allowance Communication to TC

☐ Appeal Communication to Board
of Appeals and Interferences

☐ Appeal Communication to TC
(Appeal Notice, Brief, Reply Brief)

☐ Proprietary Information

☐ Status Letter

☐ Other Enclosure(s) (please identify
below): |
|---|--|---|

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	VOLPE AND KOENIG, P.C.		
Signature			
Printed name	Scott Wolinsky		
Date	August 18, 2005	Reg. No.	46,413

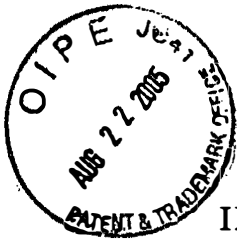
CERTIFICATE OF TRANSMISSION/MAILING

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Signature			
Typed or printed name	Scott Wolinsky	Date	August 18, 2005

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:

Zhang et al.

Application No.: 10/962,720

Confirmation No.: 9856

Filed: October 12, 2004

For: WIRELESS COMMUNICATION
METHOD AND APPARATUS FOR
COORDINATING NODE-B'S AND
SUPPORTING ENHANCED UPLINK
TRANSMISSIONS DURING HANDOVER

Group: 2662

Examiner: Brian S. Roberts

Our File: I-2-0674.1US

Date: August 18, 2005

REPLY PURSUANT TO 37 C.F.R. §1.111

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

Sir:

This Reply is being timely filed in response to the Office Action dated June 1, 2005. Please amend the application without prejudice or disclaimer as follows:

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended): In a wireless multi-cell communication system including a radio network controller (RNC), a plurality of Node-Bs, and at least one wireless transmit/receive unit (WTRU), a method of coordinating Node-Bs during handover, the method comprising:

- (a) the RNC initiating an inter-Node-B soft handover;
- (b) the WTRU establishing communication connections with at least two of the Node-Bs;
- (c) designating a particular one of the Node-Bs as a primary Node-B, wherein the primary Node-B is configured to store negative acknowledgement (NACK) data packets and use soft combining to process transmissions, and the primary Node-B is also configured to transmit at least one of a positive acknowledgement (ACK) and a NACK to the WTRU, and transmit a correctly decoded data packet to the RNC;
- (d) designating the other one(s) of the Node-Bs as a non-primary Node-B, wherein the non-primary Node-B does not store NACK data packets and does not use soft combining to process transmissions, and the non-primary Node-B is not configured to transmit at least one of an ACK and a NACK to the WTRU; and
- (e) the RNC informing the Node-Bs that the particular Node-B is a primary Node-B.

2. (original): The method of claim 1 further comprising:

(f) the primary Node-B controlling an uplink (UL) transmission originating from the WTRU during soft handover.

3. (original): The method of claim 2 wherein the primary Node-B schedules the UL transmission.

4. (original): The method of claim 3 wherein the primary Node-B receives physical measurement information regarding the non-primary Node-B(s), and considers the information when scheduling the UL transmission.

5. (original): The method of claim 4 wherein the primary Node-B transmits scheduling information to the WTRU and the non-primary Node-B(s).

6. (original): The method of claim 1 further comprising:
(f) the primary Node-B controlling transmissions during soft handover by performing enhanced uplink (EU) scheduling and hybrid automatic repeat request (H-ARQ) operations.

7. (original): The method of claim 6 wherein a positive acknowledgement (ACK) or negative acknowledgement (NACK) is transmitted either synchronously or non-synchronously from the primary Node-B to the WTRU.

8. (original): The method of claim 6 wherein the non-primary Node-B transmits correctly decoded data blocks to the RNC.

9. (original): The method of claim 1 wherein the primary Node-B is selected by the WTRU based on a downlink quality received from the Node-Bs.

10. (original): The method of claim 9 wherein the downlink quality is downlink pilot power.

11. (original): The method of claim 1 wherein the primary Node-B is selected by the RNC based on uplink performance statistics at each Node-B.

12. (original): The method of claim 11 wherein the RNC selects the primary Node-B further based on a report generated by the WTRU regarding a downlink quality from the Node-Bs.

13. (original): The method of claim 11 wherein the RNC selects the primary Node-B further based on a report generated by the WTRU regarding a combination of uplink and downlink quality.

Claims 14-16 (canceled)

17. (currently amended): A wireless communication system for coordinating Node-Bs during handover for enhanced uplink communication, the system comprising:

- (a) a wireless transmit/receive unit (WTRU); and
- (b) a plurality of Node-Bs, each Node-B comprising an entity for enhanced uplink (EU) functionalities and processing a transmission from the WTRU independently, wherein a particular one of the Node-Bs is designated as being a

primary Node-B which is configured to store negative acknowledgement (NACK) data packets and use soft combining to process transmissions, and the primary Node-B is also configured to transmit at least one of a positive acknowledgement (ACK) and a NACK to the WTRU, and transmit a correctly decoded data packet to the RNC, the other Node-B(s) being designated as a non-primary Node-B which does not store NACK data packets and does not use soft combining to process transmissions, and the non-primary Node-B is not configured to transmit at least one of an ACK and a NACK to the WTRU, and the primary Node-B controlling EU transmissions from the WTRU during handover.

18. (original): The system of claim 17 wherein the primary Node-B controls an uplink (UL) transmission originating from the WTRU during soft handover.

19. (original): The system of claim 18 wherein the primary Node-B schedules the UL transmission.

20. (original): The system of claim 19 wherein the primary Node-B receives physical measurement information regarding the non-primary Node-B(s), and considers the physical measurement information when scheduling the UL transmission.

21. (original): The system of claim 19 wherein the primary Node-B transmits scheduling information to the WTRU and the non-primary Node-B(s).

22. (original): The system of claim 17 wherein a positive acknowledgement (ACK) or negative acknowledgement (NACK) is transmitted either synchronously or non-synchronously from the primary Node-B to the WTRU.

23. (currently amended): In a wireless multi-cell communication system including a radio network controller (RNC), a plurality of Node-Bs, and at least one wireless transmit/receive unit (WTRU), an integrated circuit (IC) used to coordinate Node-Bs during handover, the IC comprising:

(a) means for designating a particular one of the Node-Bs as a primary Node-B, wherein the primary Node-B is configured to store negative acknowledgement (NACK) data packets and use soft combining to process transmissions, and the primary Node-B is also configured to transmit at least one of a positive acknowledgement (ACK) and a NACK to the WTRU, and transmit a correctly decoded data packet to the RNC;

(b) means for designating one or more other ones of the Node-Bs as a non-primary Node-B, wherein the non-primary Node-B does not store NACK data packets and does not use soft combining to process transmissions, and the non-primary Node-B is not configured to transmit at least one of an ACK and a NACK to the WTRU; and

(c) means for informing the Node-Bs that the particular Node-B has been designated as a primary Node-B.

24. (original): The IC of claim 23 wherein the IC is integrated with the RNC.

Claims 25 and 26 (canceled)

27. (currently amended): In a wireless multi-cell communication system including a plurality of Node-Bs, a radio network controller (RNC) comprising:

- (a) means for controlling the plurality of Node-Bs;
- (b) means for initiating an inter-node-B soft handover;
- (c) means for designating a particular one of the Node-Bs as a primary Node-B, wherein the primary Node-B is configured to store negative acknowledgement (NACK) data packets and use soft combining to process transmissions, and the primary Node-B is also configured to transmit at least one of a positive acknowledgement (ACK) and a NACK to the WTRU, and transmit a correctly decoded data packet to the RNC;

- (d) means for designating one or more other ones of the Node-Bs as a non-primary Node-B, wherein the non-primary Node-B does not store NACK data packets and does not use soft combining to process transmissions, and the non-primary Node-B is not configured to transmit at least one of an ACK and a NACK to the WTRU; and

- (e) means for informing the Node-Bs that the particular Node-B has been designated as a primary Node-B.

28. (currently amended): In a wireless multi-cell communication system including a plurality of Node-Bs, an integrated circuit (IC) comprising:

- (a) means for controlling the plurality of Node-Bs;
- (b) means for initiating an inter-Node-B soft handover;
- (c) means for designating a particular one of the Node-Bs as a primary Node-B, wherein the primary Node-B is configured to store negative acknowledgement (NACK) data packets and use soft combining to process transmissions, and the

primary Node-B is also configured to transmit at least one of a positive acknowledgement (ACK) and a NACK to the WTRU, and transmit a correctly decoded data packet to the RNC;

(d) means for designating one or more other ones of the Node-Bs as a non-primary Node-B, wherein the non-primary Node-B does not store NACK data packets and does not use soft combining to process transmissions, and the non-primary Node-B is not configured to transmit at least one of an ACK and a NACK to the WTRU; and

(e) means for informing the Node-Bs that the particular Node-B has been designated as a primary Node-B.

29. (original): The IC of claim 28 wherein the IC is integrated with a radio network controller (RNC) that controls the plurality of Node-Bs.

REMARKS/ARGUMENTS

Claims 1-13, 17-24 and 27-29 are currently pending in this application. Claims 14-16, 25 and 26 have been cancelled without prejudice. Claims 1, 17, 23, 27 and 28 have been amended to more distinctly claim the subject matter which the Applicants regard as the invention. The Applicants submit that no new matter has been added to the application by the Amendment.

Claim Rejections

Claims 1-10, 17-24 and 27-29 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Application Publication No. 2004/0219917 (Love et al., hereinafter "Love") in view of U.S. Patent Application Publication No. 2005/0083888 (Smee et al., hereinafter "Smee").

Claims 11-13 are rejected under 35 U.S.C. §103(a) as being unpatentable over Love in view of Smee, as applied to claim 1, and further in view of U.S. Patent No. 6,892,071 (Park et al., hereinafter "Park").

The present invention is related to a wireless communication method and apparatus for coordinating Node-Bs during handover for enhanced uplink (EU) transmission. A radio network controller (RNC) initiates an inter-Node-B soft handover. A wireless transmit/receive unit (WTRU) establishes communication connections with a plurality of Node-Bs. A particular one of the Node-Bs is designated as being a primary Node-B, and each of other Node-Bs are designated as being a non-primary Node-B. The RNC informs all of the Node-Bs that the particular Node-B is a primary Node-B.

Love discloses Hybrid Automatic Repeat ReQuest (H-ARQ) acknowledged/not acknowledged coding for a communication device during soft handoff. The Examiner concedes that Love does not disclose designating Node-Bs as primary and

non-primary Node-B's. Thus, the Examiner relies on the teachings of Smee, which discloses forward link handoff for wireless communication systems. The Examiner asserts that Smee discloses a plurality of base transceiver subsystems (BTSs) 110 which "jointly determine which BTS should serve (primary) the terminal. The Examiner refers to paragraphs 0039-0042 of Smee, which discloses that the BTS can jointly determine which sector (not BTS) should serve a terminal" (see lines 5-12). When providing motivation for combining the teachings of Smee with the teachings of Love, the Examiner indicates that Love discloses a primary Node-B containing a scheduler and ARQ, and refers to Figure 3 of Love which illustrates a plurality of primary BTSs with scheduling functions, but does not illustrate any non-primary Node-Bs.

Claims 1, 17, 23, 27 and 28 have been amended to more distinctly claim the subject matter which the Applicants regard as the invention by further reciting the properties of the primary and non-primary Node-Bs. Neither of Smee and Love teach or suggest a primary Node-B that is configured to store negative acknowledgement (NACK) data packets and use soft combining to process transmissions, and the primary Node-B is also configured to transmit at least one of a positive acknowledgement (ACK) and a NACK to the WTRU, and transmit a correctly decoded data packet to the RNC. Furthermore, neither of Smee and Love teach or suggest a non-primary Node-B that does not store NACK data packets and does not use soft combining to process transmissions, and the non-primary Node-B is not configured to transmit at least one of an ACK and a NACK to the WTRU.

With respect to claims 2-13, 18-22, 24 and 29, these claims are dependent upon claims 1, 17, 23 and 28, respectively, and are believed to be allowable for the same reasons provided above.

Applicant: Zhang et al.
Application No.: 10/962,720

In view of the arguments presented above, the withdrawal of the rejections of claims 1-13, 17-24 and 27-29 is respectfully requested.

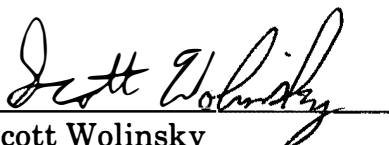
Conclusion

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing amendment and remarks, Applicants respectfully submit that the present application, including claims 1-13, 17-24 and 27-29, is in condition for allowance and a notice to that effect is respectfully requested.

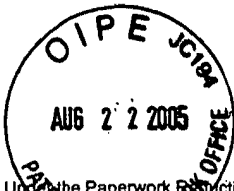
Respectfully submitted,

Zhang et al.

By 
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DRU
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PTO/SB/21 (04-04)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	10/962,720
	Filing Date	October 12, 2004
	First Named Inventor	Zhang et al.
	Art Unit	2662
	Examiner Name	Brian S. Roberts
	Attorney Docket Number	I-2-0674.1 US
Total Number of Pages in This Submission		

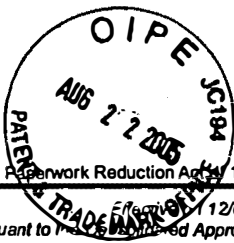
ENCLOSURES (Check all that apply)		
☒ Fee Transmittal Form	☐ Drawing(s)	☐ After Allowance communication to Technology Center (TC)
☒ Fee Attached	☐ Licensing-related Papers	☐ Appeal Communication to Board of Appeals and Interferences
☐ Amendment/Reply	☐ Petition	☐ Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
☐ After Final	☐ Petition to Convert to a Provisional Application	☐ Proprietary Information
☐ Affidavits/declaration(s)	☐ Power of Attorney, Revocation Change of Correspondence Address	☐ Status Letter
☐ Extension of Time Request	☐ Terminal Disclaimer	☒ Other Enclosure(s) (please identify below):
☐ Express Abandonment Request	☐ Request for Refund	Form PTO-1449
☒ Supplemental Information Disclosure Statement	☒ CD, Number of CD(s) <u>1</u>	
☐ Certified Copy of Priority Document(s)	Remarks	
☐ Response to Missing Parts/Incomplete Application		
☐ Response to Missing Parts under 37 CFR 1.52 or 1.53		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT		
Firm or Individual name	Jeffrey M. Glabicki	Reg. No. 42,584
Signature		
Date	August 18, 2005	

CERTIFICATE OF TRANSMISSION/MAILING			
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.			
Typed or printed name	Jeffrey M. Glabicki		
Signature		Date	August 18, 2005

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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PTO/SB/17 (12-04)

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Fees pursuant to the Patent and Trademark Fee Schedule, 12/08/2004.
Fees pursuant to the Patent and Trademark Fee Schedule, 12/08/2004 (H.R. 4818).**FEE TRANSMITTAL**
For FY 2005☐ Applicant claims small entity status. See 37 CFR 1.27**TOTAL AMOUNT OF PAYMENT** (\$)**180.00****Complete if Known**

Application Number	10/962,720
Filing Date	October 12, 2004
First Named Inventor	Zhang et al.
Examiner Name	Brian S. Roberts
Art Unit	2662
Attorney Docket No.	I-2-0674.1US

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____
☒ Deposit Account Deposit Account Number: **09-0435** Deposit Account Name: **InterDigital Communications Corporation**

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee
☒ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17 ☒ Credit any overpayments

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

FEE CALCULATION**1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee (\$)	Small Entity Fee (\$)
Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent	50	25
Each independent claim over 3 or, for Reissues, each independent claim more than in the original patent	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)	Multiple Dependent Claims	Fee (\$)	Fee Paid (\$)
-	=	x	= 0.00			
HP = highest number of total claims paid for, if greater than 20						
Indep. Claims	Extra Claims	Fee (\$)	Fee Paid (\$)			
-	=	x	= 0.00			
HP = highest number of independent claims paid for, if greater than 3						

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
-	-	/ 50 =	(round up to a whole number) x	= 0.00

4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount)

Other: Supplemental Information Disclosure Statement

Fees Paid (\$)**180.00****SUBMITTED BY**

Signature		Registration No. (Attorney/Agent) 42,584	Telephone 215-568-6400
Name (Print/Type)	Jeffrey M. Glabicki		Date August 18, 2005

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:

Zhang et al.

Application No.: 10/962,720

Confirmation No.: 9856

Filed: October 12, 2004

For: WIRELESS COMMUNICATION
METHOD AND APPARATUS FOR
COORDINATING NODE-B'S AND
SUPPORTING ENHANCED UPLINK
TRANSMISSIONS DURING HANDOVER

Group: 2662

Examiner: Brian S. Roberts

Our File: I-2-0674.1US

Date: August 18, 2005

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

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

Sir:

Further to Applicants' Duty of Disclosure pursuant to 37 C.F.R. §1.56, Applicants wish to bring to the Examiner's attention the material cited on the enclosed PTO-1449 form. Newly cited documents are indicated by an asterisk (*). Copies of the newly cited documents are enclosed on a compact disk (CD). Copies of previously cited documents are not included.

08/23/2005 SFELEKE1 00000010 090435 10962720

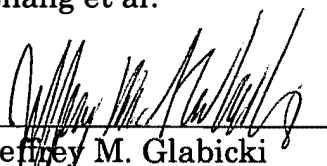
01 FC:1806 180.00 DA

Applicant: Zhang et al.
Application No.: 10/962,720

It is respectfully requested that the Examiner consider these documents and return an initialed copy of the PTO-1449 form indicating his consideration of the cited materials.

Respectfully submitted,

Zhang et al.

By 
Jeffrey M. Glabicki
Registration No. 42,584
(215) 568-6400

Volpe and Koenig, P.C.
United Plaza, Suite 1600
30 South 17th Street
Philadelphia, PA 19103

JMG/ks
Enclosures (2)

FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)				ATTY. DOCKET NO. I-2-0674.1US		SERIAL NO. 10/962,720	
				APPLICANT Zhang et al.			
				FILING DATE October 12, 2004		GROUP 2662	

OIP
 AUG 22 2005
 PATENT & TRADEMARK OFFICE

U.S. PATENT DOCUMENTS								
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
		6,892,071	05/2005	Park et al.				
		2003/0081692	05/2003	Kwan et al.				
		2003/0161284	08/2003	Chen				
		2003/0210668	11/2003	Malladi et al.				
		2004/0072567	04/2004	Cao et al.				
		2004/0085934	05/2004	Balachandran et la.				
		2004/0202129	10/2004	Kolding et al.				
		2004/0203991	10/2004	Chen et al.				
		2004/0219917	11/2004	Love et al.				
		2004/0219919	11/2004	Whinnett et al.				
		2004/0219920	11/2004	Love et al.				
		2004/0228313	11/2004	Cheng et al.				
		2005/0041694	02/2005	Liu				
		2005/0047354	03/2005	Zeira et al.				
		2005/0048920	03/2005	Liu				
		2005/0083888	04/2005	Smee et al.				
FOREIGN PATENT DOCUMENTS								
		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
		GPP2 C.S0002-C, "Physical Layer Standard for cdma2000 Spread Spectrum Systems", 3 rd Generation Partnership Project 2 "3GPP2", Version 2.0, Revision C, July 23, 2004.						

EXAMINER	DATE CONSIDERED
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EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

FORM PTO-1449		ATTY. DOCKET NO. I-2-0674.1US	SERIAL NO. 10/962,720
U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)		APPLICANT Zhang et al.	
		FILING DATE October 12, 2004	GROUP 2662
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)			
	*	3GPP2 C.20003-C, "Medium Access Control (MAC) Standard for cdma2000 Spread Spectrum Systems", 3 rd Generation Partnership Project 2 "3GPP2", Version 2.0, Release C, August 2004.	
	*	3GPP2 C.S0004-C, "Signaling Link Access Control (LAC) Standard for cdma2000 Spread Spectrum Systems", 3 rd Generation Partnership Project 2 "3GPP2", Version 2.0, Revision C, July 23, 2004.	
	*	3GPP2 C.S0005-C, "Upper Layer (Layer 3) Signaling Standard for cdma2000 Spread Spectrum Systems", 3 rd Generation Partnership Project 2 "3GPP2", Version 2.0, Revision c, July 23, 2004.	

EXAMINER	DATE CONSIDERED
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EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

ARTIFACT SHEET

Enter artifact number below. Artifact number is application number + artifact type code (see list below) + sequential letter (A, B, C ...). The first artifact folder for an artifact type receives the letter A, the second B, etc..

Examples: 59123456PA, 59123456PB, 59123456ZA, 59123456ZB

Indicate quantity of a single type of artifact received but not scanned. Create individual artifact folder/box and artifact number for each Artifact Type.

☒

CD(s) containing:

computer program listing

Doc Code: Computer

Artifact Type Code: P

pages of specification

and/or sequence listing

and/or table

Doc Code: Artifact

Artifact Type Code: S

content unspecified or combined

Doc Code: Artifact

Artifact Type Code: U

☐

Stapled Set(s) Color Documents or B/W Photographs

Doc Code: Artifact Artifact Type Code: C

☐

Microfilm(s)

Doc Code: Artifact Artifact Type Code: F

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Video tape(s)

Doc Code: Artifact Artifact Type Code: V

☐

Model(s)

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☐

Bound Document(s)

Doc Code: Artifact Artifact Type Code: B

☐

Confidential Information Disclosure Statement or Other Documents marked Proprietary, Trade Secrets, Subject to Protective Order, Material Submitted under MPEP 724.02, etc.

Doc Code: Artifact Artifact Type Code X

☐

Other, description: _____

Doc Code: Artifact Artifact Type Code: Z

March 8, 2004

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2004

Application or Docket Number

1096272D

CLAIMS AS FILED - PART I

(Column 1) (Column 2)

TOTAL CLAIMS	29	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	29 minus 20 =	9
INDEPENDENT CLAIMS	7 minus 3 =	4
MULTIPLE DEPENDENT CLAIM PRESENT ☐		

SMALL ENTITY TYPE ☐ OR

OTHER THAN SMALL ENTITY

RATE	FEE		RATE	FEE
BASIC FEE	395.00	OR	BASIC FEE	790.00
X\$ 9=		OR	X\$18=	16.2
X44=		OR	X88=	352
+150=		OR	+300=	
TOTAL		OR	TOTAL	1304

* If the difference in column 1 is less than zero, enter "0" in column 2

CLAIMS AS AMENDED - PART II

(Column 1) (Column 2) (Column 3)

AMENDMENT A	8/28/05	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	*	29	Minus	** 29 =
	Independent	*	29	Minus	*** 7 =
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐				

SMALL ENTITY TYPE ☐ OR

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X\$ 9=		OR	X\$18=	
X44=		OR	X88=	
+150=		OR	+300=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

(Column 1) (Column 2) (Column 3)

AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	*		Minus	** =
	Independent	*		Minus	*** =
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐				

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X\$ 9=		OR	X\$18=	
X44=		OR	X88=	
+150=		OR	+300=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

(Column 1) (Column 2) (Column 3)

AMENDMENT C		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	*		Minus	** =
	Independent	*		Minus	*** =
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐				

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X\$ 9=		OR	X\$18=	
X44=		OR	X88=	
+150=		OR	+300=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
 The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Please forward to Group Art Unit 2662

Amended Compact Discs

EXAMINER NOTE: THIS PAPER IS AN INTERNAL WORKSHEET ONLY. DO NOT ENCLOSE WITH ANY COMMUNICATION TO THE APPLICANT. ITS PURPOSE IS ONLY THAT OF AN AID IN HIGHLIGHTING A PARTICULAR PROBLEM IN A COMPACT DISC.

THE ATTACHED CD (COPY 1) HAS BEEN REVIEWED BY OIPE FOR COMPLIANCE WITH 37 CFR 1.52(E). **Please match this CD with the application listed below.**

Date: 9/7/2005
Serial No./Control No. 101962720
Reviewed By: K. SMITH Phone: 308 9210 ext. 118

- ☐ The compact discs are readable and acceptable.
- ☐ Copy 1 and Copy 2 of the compact discs are not the same.
- ☐ The compact discs are unreadable.
- ☐ The files on the compact discs are not in ASCII.
- ☐ The compact discs contain at least one virus.

☒ Other

NOT PROPER SUBJECT MATTER FOR CD.

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S62	290	soft adj combining	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/02 11:18
S66	42	Node-B and RNC and (H-ARQ or HARQ)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/02 12:53
S67	17	Node-B and scheduler and (H-ARQ or HARQ) and ACK and NACK	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/02 12:55
S68	37	Node-B and (soft adj handoff)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/02 12:56
S70	25	hard adj handover and Node-B	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/02 12:58
S71	138	first with ((Node adj B) or (Node-B)) and (handover or handoff) and RNC	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/02 13:01
S72	35	first with ((Node adj B) or (Node-B)) and (handover or handoff) and RNC and NACK	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/02 13:02
S78	16	buffer same (NACK and ACK) and Node-B	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/02 13:10

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	8	soft adj combining and Node-B	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/09 11:54
L2	6	soft adj combining and Node-B and RNC	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/09 11:57
L3	0	(soft adj combining and Node-B and RNC).clm.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/09 11:57
L4	2	((primary or non-primary) near Node-B).clm.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/09 12:01
L5	8	(RNC and WTRU and Node-B).clm.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/09 12:05
L6	2	(NACK and ACK and Node-B).clm.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/09 12:06
L7	5	(RNC and WTRU and soft adj handover).clm.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/09/09 12:06



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

24374 7590 09/22/2005

VOLPE AND KOENIG, P.C.
DEPT. ICC
UNITED PLAZA, SUITE 1600
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

EXAMINER

ROBERTS, BRIAN S

ART UNIT

PAPER NUMBER

2662

DATE MAILED: 09/22/2005

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/962,720	10/12/2004	Guodong Zhang	1-2-0674.1US	9856

TITLE OF INVENTION: WIRELESS COMMUNICATION METHOD AND APPARATUS FOR COORDINATING NODE-B'S AND SUPPORTING ENHANC UPLINK TRANSMISSIONS DURING HANDOVER

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1400	\$300	\$1700	12/22/2005

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATEN PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHT THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPO PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM TH MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. TH STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (O AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WIL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is n claiming SMALL ENTITY status, check box 5a on Part B - Fee Transmittal and pay the PUBLICATION FEE (if required) and l the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) w your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail**

**Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
(571) 273-2885**

or **Fax**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

24374 7590 09/22/2005

**VOLPE AND KOENIG, P.C.
DEPT. ICC
UNITED PLAZA, SUITE 1600
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103**

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/962,720	10/12/2004	Guodong Zhang	1-2-0674.1US	9856

TITLE OF INVENTION: WIRELESS COMMUNICATION METHOD AND APPARATUS FOR COORDINATING NODE-B'S AND SUPPORTING ENHANCED UPLINK TRANSMISSIONS DURING HANDOVER

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1400	\$300	\$1700	12/22/2005

EXAMINER	ART UNIT	CLASS-SUBCLASS
ROBERTS, BRIAN S	2662	370-331000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are enclosed:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):

- ☐ A check in the amount of the fee(s) is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized by charge the required fee(s), or credit any overpayment Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above. NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other part interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 14 Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/962,720	10/12/2004	Guodong Zhang	I-2-0674.1US	9856
24374	7590	09/22/2005	EXAMINER	
VOLPE AND KOENIG, P.C. DEPT. ICC UNITED PLAZA, SUITE 1600 30 SOUTH 17TH STREET PHILADELPHIA, PA 19103			ROBERTS, BRIAN S	
			ART UNIT	PAPER NUMBER
			2662	

DATE MAILED: 09/22/2005

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office Patent Legal Administration at (571) 272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

Notice of Allowability

Application No.

10/962,720

Examiner

Brian Roberts

Applicant(s)

ZHANG ET AL.

Art Unit

2662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8/22/2005.
2. ☒ The allowed claim(s) is/are 1-13, 17-24 and 27-29, respectively renumbered 1-24.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

- Applicant's Amendment filed 5/24/2005 is acknowledged.
- Claims 1, 17, 23, 27, and 28 have been amended.
- Claims 14-16 and 25-26 have been cancelled.
- Claims 1-13, 17-24, and 27-29 remain pending.

Allowable Subject Matter

Claims 1-13, 17-24 and 27-29 are allowed.

- In reference to claims 1, 17, 23, 27, and 28

Independent claims 1, 17, 23, 27, and 28 are allowed because the prior record fails to teach or fairly suggest a system or method designating a particular one of the Node-Bs as a primary Node-B, wherein the primary Node-B is configured to store negative acknowledgement (NACK) data packets and use soft combining to process transmissions, and the primary Node-B is also configured to transmit at least one of a positive acknowledgement (ACK) and a NACK to the WTRU, and transmit a correctly decoded data packet to the RNC; and designating the other one(s) of the Node-Bs as a non-primary Node-B, wherein the non-primary Node-B does not store NACK data packets and does not use soft combining to process transmissions, and the non-primary Node-B is not configured to transmit at least one of an ACK and a NACK to the WTRU.

- Claims 2-13, 17-22, 24, and 29

Claims 2-13, 17-22, 24, and 29 are allowed because they are dependent from claims 1, 17, 23, 27, and 28.

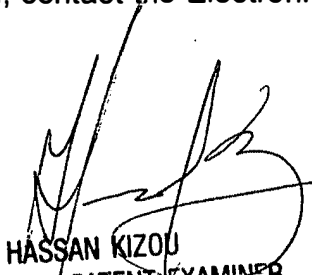
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Roberts whose telephone number is (571) 272-3095. The examiner can normally be reached on M-F 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BSR
09/09/2005


HASSAN KIZOU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)				ATTY. DOCKET NO. I-2-0674.1US		SERIAL NO. 10/962,720	
				APPLICANT Zhang et al.			
				FILING DATE October 12, 2004		GROUP 2662	
U.S. PATENT DOCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
BSR		6,892,071	05/2005	Park et al.			
		2003/0081692	05/2003	Kwan et al.			
		2003/0161284	08/2003	Chen			
		2003/0210668	11/2003	Malladi et al.			
		2004/0072567	04/2004	Cao et al.			
		2004/0085934	05/2004	Balachandran et la.			
		2004/0202129	10/2004	Kolding et al.			
		2004/0203991	10/2004	Chen et al.			
		2004/0219917	11/2004	Love et al.			
		2004/0219919	11/2004	Whinnett et al.			
		2004/0219920	11/2004	Love et al.			
		2004/0228313	11/2004	Cheng et al.			
		2005/0041694	02/2005	Liu			
		2005/0047354	03/2005	Zeira et al.			
		2005/0048920	03/2005	Liu			
BSR		2005/0083888	04/2005	Smee et al.			
FOREIGN PATENT DOCUMENTS							
		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							

EXAMINER <i>Brian R. R. R.</i>	DATE CONSIDERED 09/09/05
-----------------------------------	-----------------------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)				ATTY. DOCKET NO. I-2-0674.1US		SERIAL NO. 10/962,720	
				APPLICANT Zhang et al.			
				FILING DATE October 12, 2004		GROUP 2662	

OIP
 AUG 22 2005
 PATENT & TRADEMARK OFFICE

U.S. PATENT DOCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
BSR		6,892,071	05/2005	Park et al.			
		2003/0081692	05/2003	Kwan et al.			
		2003/0161284	08/2003	Chen			
		2003/0210668	11/2003	Malladi et al.			
		2004/0072567	04/2004	Cao et al.			
		2004/0085934	05/2004	Balachandran et al.			
		2004/0202129	10/2004	Kolding et al.			
		2004/0203991	10/2004	Chen et al.			
		2004/0219917	11/2004	Love et al.			
		2004/0219919	11/2004	Whinnett et al.			
		2004/0219920	11/2004	Love et al.			
		2004/0228313	11/2004	Cheng et al.			
		2005/0041694	02/2005	Liu			
		2005/0047354	03/2005	Zeira et al.			
		2005/0048920	03/2005	Liu			
BSR		2005/0083888	04/2005	Smee et al.			

FOREIGN PATENT DOCUMENTS								
		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)	
BSR	GPP2 C.S0002-C, "Physical Layer Standard for cdma2000 Spread Spectrum Systems", 3 rd Generation Partnership Project 2 "3GPP2", Version 2.0, Revision C, July 23, 2004.

EXAMINER <i>Brian Roberts</i>	DATE CONSIDERED 09/09/05
----------------------------------	-----------------------------

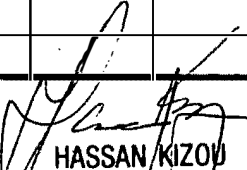
EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

FORM PTO-1449		ATTY. DOCKET NO. I-2-0674.1US	SERIAL NO. 10/962,720
U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)		APPLICANT Zhang et al.	
		FILING DATE October 12, 2004	GROUP 2662
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)			
BSR	.	3GPP2 C.20003-C, "Medium Access Control (MAC) Standard for cdma2000 Spread Spectrum Systems", 3 rd Generation Partnership Project 2 "3GPP2", Version 2.0, Release C, August 2004.	
BSR	.	3GPP2 C.S0004-C, "Signaling Link Access Control (LAC) Standard for cdma2000 Spread Spectrum Systems", 3 rd Generation Partnership Project 2 "3GPP2", Version 2.0, Revision C, July 23, 2004.	
BSR	.	3GPP2 C.S0005-C, "Upper Layer (Layer 3) Signaling Standard for cdma2000 Spread Spectrum Systems", 3 rd Generation Partnership Project 2 "3GPP2", Version 2.0, Revision c, July 23, 2004.	

EXAMINER <i>Brian Roberts</i>	DATE CONSIDERED <i>09/09/05</i>
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EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Issue Classification 	Application/Control No.		Applicant(s)/Patent under Reexamination	
	10/962,720		ZHANG ET AL.	
	Examiner		Art Unit	
	Brian Roberts		2662	

ISSUE CLASSIFICATION									
ORIGINAL				CROSS REFERENCE(S)					
CLASS		SUBCLASS		CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
370		331		455	436	439	442		
INTERNATIONAL CLASSIFICATION				709	208				
H	0	4	Q	7/00					
				/					
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				/					
				/					
Brian Roberts 09/15/05 (Assistant Examiner) (Date)				 HASSAN KIZOV SUPERVISORY PATENT EXAMINER TECHNOLOGY CENTER 2600 (Primary Examiner) (Date)				Total Claims Allowed: 24	
 (Legal Instruments Examiner) (Date)								O.G. Print Claim(s) 1	O.G. Print Fig. 3

☐ Claims renumbered in the same order as presented by applicant		☐ CPA		☐ T.D.		☐ R.1.47	
Final	Original	Final	Original	Final	Original	Final	Original
1	1		31		61		91
2	2		32		62		92
3	3		33		63		93
4	4		34		64		94
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17	20		50		80		110
18	21		51		81		111
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Search Notes

Application/Control No.

10/962,720

Examiner

Brian Roberts

Applicant(s)/Patent under
Reexamination

ZHANG ET AL.

Art Unit

2662

SEARCHED

Class	Subclass	Date	Examiner
370	278	9/8/2005	BSR
370	282	9/8/2005	
370	331-332	9/8/2005	
370	329	9/8/2005	
455	436	9/9/2005	
455	438-439	9/9/2005	
455	442	9/9/2005	
709	208	9/9/2005	
			BSR

INTERFERENCE SEARCHED

Class	Subclass	Date	Examiner
Interference search: See interference search printout		9/9/2005	BSR

**SEARCH NOTES
(INCLUDING SEARCH STRATEGY)**

	DATE	EXMR
PALM inventor search	9/8/2005	BSR
Updated search: 370/278,282,331-332,329 455/436,438-439,442 709/208	9/9/2005	BSR
EAST Text Search: See text history printout	9/9/2005	BSR

Index of Claims



Application/Control No.

10/962,720

Examiner

Brian Roberts

Applicant(s)/Patent under
Reexamination

ZHANG ET AL.

Art Unit

2662

✓	Rejected
=	Allowed

—	(Through numeral) Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claim	Final	Original	Date
1	1	11	09/15/05
2	2	11	
3	3	11	
4	4	11	
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Claim	Final	Original	Date
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Bib Data Sheet

CONFIRMATION NO. 9856

SERIAL NUMBER 10/962,720	FILING DATE 10/12/2004 RULE	CLASS 370	GROUP ART UNIT 2662	ATTORNEY DOCKET NO. I-2-0674.1US
-----------------------------	---------------------------------------	--------------	------------------------	--

APPLICANTS

Guodong Zhang, Farmingdale, NY;

Sung-Hyuk Shin, Northvale, NJ;

Stephen E. Terry, Northport, NY; James M. Miller, Verona, NJ;

Stephen G. Dick, Nesconset, NY;

** CONTINUING DATA *****

This appln claims benefit of 60/517,656 11/05/2003

and claims benefit of 60/519,990 11/14/2003

and claims benefit of 60/520,692 11/17/2003

and claims benefit of 60/578,674 06/10/2004

** FOREIGN APPLICATIONS *****

IF REQUIRED, FOREIGN FILING LICENSE GRANTED

** 11/19/2004

Foreign Priority claimed ☐ yes ☒ no	STATE OR	SHEETS	TOTAL	INDEPENDENT
35 USC 119 (a-d) conditions met ☒ yes ☐ no ☐ Met after Allowance	COUNTRY	DRAWING	CLAIMS	CLAIMS
Verified and Acknowledged	NY	4	24	7
Examiner's Signature <i>Brian</i>	Initials <i>Robert BSR</i>			

ADDRESS

24374

VOLPE AND KOENIG, P.C.

DEPT. ICC

UNITED PLAZA, SUITE 1600

30 SOUTH 17TH STREET

PHILADELPHIA, PA

19103

TITLE

Wireless communication method and apparatus for coordinating Node-B's and supporting enhanced uplink transmissions during handover

FILING FEE RECEIVED 1304	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees
		☐ 1.16 Fees (Filing)
		☐ 1.17 Fees (Processing Ext. of time)
		☐ 1.18 Fees (Issue)
		☐ Other _____
		☐ Credit

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: MailMail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571) 273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of Fee(s) Transmittal. This certificate cannot be used for any other accompany papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

24374 7590 09/22/2005

VOLPE AND KOENIG, P.C.
DEPT. ICC
UNITED PLAZA, SUITE 1600
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

12/28/2005 LWONDIH2 00000082 090435 10962720

01 FC:1501 1400.00 DA
02 FC:1504 300.00 DACertificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.Jeffrey M. Glabicki (Depositor's name)
(Signature)
12/22/05 (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/962,720	10/12/2004	Guodong Zhang	1-2-0674.1US	9856

TITLE OF INVENTION: WIRELESS COMMUNICATION METHOD AND APPARATUS FOR COORDINATING NODE-B'S AND SUPPORTING ENHANCED UPLINK TRANSMISSIONS DURING HANDOVER

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1400	\$300	\$1700	12/22/2005

EXAMINER	ART UNIT	CLASS-SUBCLASS
ROBERTS, BRIAN S	2662	370-331000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

Volpe and Koenig, P.C.

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (printer type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

InterDigital Technology Corporation

Wilmington, DE

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are enclosed:

- ☒ Issue Fee
- ☒ Publication Fee (No small entity discount permitted)
- ☒ Advance Order - # of Copies _____

4b. Payment of Fee(s):

- ☐ A check in the amount of the fee(s) is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☒ The Director is hereby authorized by charge the required fee(s), or credit any overpayment Deposit Account Number 09-0435 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
- ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above. NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other part interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature

Date

Typed or printed name

Jeffrey M. Glabicki

Registration No.

42,584

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 14 Alexandria, Virginia 22313-1450.

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**TRANSMITTAL
FORM**

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

Application Number	10/962,720
Filing Date	October 12, 2004
First Named Inventor	Zhang et al.
Art Unit	2662
Examiner Name	Brian S. Roberts
Attorney Docket Number	I-2-0674.1US

ENCLOSURES (Check all that apply)

- | | | |
|---|--|---|
| ☒ Fee Transmittal Form
☐ Fee Attached
☐ Amendment/Reply
☐ After Final
☐ Affidavits/declaration(s)
☐ Extension of Time Request
☐ Express Abandonment Request
☐ Information Disclosure Statement

☐ Certified Copy of Priority Document(s)
☐ Reply to Missing Parts/
Incomplete Application
☐ Reply to Missing Parts
under 37 CFR 1.52 or 1.53 | ☐ Drawing(s)
☐ Licensing-related Papers

☐ Petition
☐ Petition to Convert to a
Provisional Application
☐ Power of Attorney, Revocation
Change of Correspondence Address
☐ Terminal Disclaimer
☐ Request for Refund
☐ CD, Number of CD(s) _____
☐ Landscape Table on CD | ☐ After Allowance Communication to TC
☐ Appeal Communication to Board
of Appeals and Interferences
☐ Appeal Communication to TC
(Appeal Notice, Brief, Reply Brief)
☐ Proprietary Information
☐ Status Letter
☒ Other Enclosure(s) (please identify
below):
Form PTOL-85 |
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Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	VOLPE AND KOENIG, P.C.		
Signature			
Printed name	Jeffrey M. Glabicki		
Date	December 22, 2005	Reg. No.	42,584

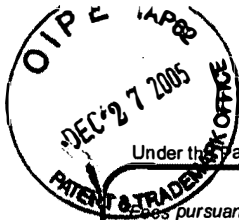
CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop issue Fee, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature			
Typed or printed name	Jeffrey M. Glabicki	Date	December 22, 2005

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Effective on 12/08/2004.

Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL

For FY 2005

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$ 1,712.00)

Complete if Known

Application Number	10/962,720
Filing Date	October 12, 2004
First Named Inventor	Zhang et al.
Examiner Name	Brian S. Roberts
Art Unit	2662
Attorney Docket No.	I-2-0674.1US

METHOD OF PAYMENT (check all that apply)☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____☒ Deposit Account Deposit Account Number: 09-0435 Deposit Account Name: InterDigital Communications Corporation

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee☒ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17 ☒ Credit any overpayments

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

FEE CALCULATION**1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee (\$)	Small Entity Fee (\$)
Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent	50	25
Each independent claim over 3 or, for Reissues, each independent claim more than in the original patent	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)	Multiple Dependent Claims	Fee (\$)	Fee Paid (\$)
-	=	x	= 0.00			
HP = highest number of total claims paid for, if greater than 20					0.00	
Indep. Claims	Extra Claims	Fee (\$)	Fee Paid (\$)			
-	=	x	= 0.00			
HP = highest number of independent claims paid for, if greater than 3						

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
- 100 =	/ 50 =	(round up to a whole number) x	=	0.00

4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount)

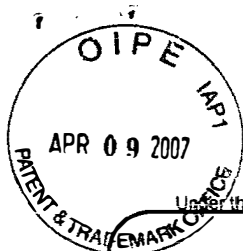
Other: Issue Fee, Publication Fee and Four (4) advance patent copies

Fees Paid (\$)
1,712.00**SUBMITTED BY**

Signature		Registration No. 42,584 (Attorney/Agent)	Telephone 215-568-6400
Name (Print/Type)	Jeffrey M. Glabicki	Date December 22, 2005	

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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PTO/SB/21 (09-04)

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**TRANSMITTAL
FORM**

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

Patent Number	7,046,648
Issue Date	May 16, 2006
First Named Inventor	Zhang et al.
Application Number	10/962,720
Filing Date	October 12, 2004
Attorney Docket Number	I-2-0674.1US

ENCLOSURES (Check all that apply)

- | | | |
|---|---|--|
| ☒ Fee Transmittal Form
☐ Fee Attached
☐ Amendment/Reply
☐ After Final
☐ Affidavits/declaration(s)
☐ Extension of Time Request
☐ Express Abandonment Request
☐ Information Disclosure Statement

☐ Certified Copy of Priority Document(s)
☐ Reply to Missing Parts/ Incomplete Application
☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53 | ☐ Drawing(s)
☐ Licensing-related Papers

☐ Petition
☐ Petition to Convert to a Provisional Application
☐ Power of Attorney, Revocation
Change of Correspondence Address
☐ Terminal Disclaimer
☐ Request for Refund
☐ CD, Number of CD(s) _____
☐ Landscape Table on CD | ☐ After Allowance Communication to TC

☐ Appeal Communication to Board of Appeals and Interferences

☐ Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
☐ Proprietary Information
☐ Status Letter
☒ Other Enclosure(s) (please identify below):
Request for Certificate of Correction and Form PTO/SB/44 |
|---|---|--|

Remarks

**Certificate
of Correction**
APR 12 2007**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT**

Firm Name	VOLPE AND KOENIG, P.C.		
Signature			
Printed name	Robert D. Leonard		
Date	04/06/07	Reg. No.	57,204

CERTIFICATE OF TRANSMISSION/MAILING

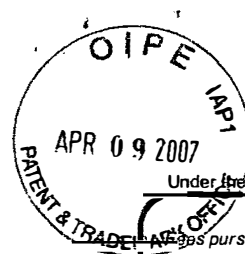
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature			
Typed or printed name	Robert D. Leonard	Date	04/06/07

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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APR 12 2007



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FEE TRANSMITTAL
For FY 2006☐ Applicant claims small entity status. See 37 CFR 1.27**TOTAL AMOUNT OF PAYMENT** (\$) 100.00**Complete if Known**

Application Number	10/962,720
Filing Date	October 12, 2004
First Named Inventor	Zhang et al.
Examiner Name	Brian S. Roberts
Art Unit	2662
Attorney Docket No.	I-2-0674.1US

METHOD OF PAYMENT (check all that apply)☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____☒ Deposit Account Deposit Account Number: 09-0435 Deposit Account Name: InterDigital Communications Corporation

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, **except for the filing fee**☒ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17 ☒ Credit any overpayments**WARNING:** Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.**FEE CALCULATION** (All the fees below are due upon filing or may be subject to a surcharge.)**1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES**Fee Description**

Each claim over 20 (including Reissues)

Fee (\$)	Small Entity Fee (\$)
50	25

Each independent claim over 3 (including Reissues)

200	100
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Multiple dependent claims

360	180
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Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)
-	=	x	= 0

Multiple Dependent Claims	
Fee (\$)	Fee Paid (\$)

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	Extra Claims	Fee (\$)	Fee Paid (\$)
-	=	x	= 0

HP = highest number of independent claims paid for, if greater than 3.

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
-	-	/ 50 =	(round up to a whole number) x	=

4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount)

Fees Paid (\$)Other (e.g., late filing surcharge): Request for Certificate of Corrections

100.00

SUBMITTED BY

Signature	<u>Robert D. Leonard</u>	Registration No. (Attorney/Agent)	57,204	Telephone	215-568-6400
Name (Print/Type)	Robert D. Leonard	Date	04/06/07		

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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APR 12 2007



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT** of:

Zhang et al.

Patent No.: 7,046,648

Issued: May 16, 2006

Appln. No.: 10/962,720

Filed: October 12, 2004

Our File: I-2-0674.1US

Date: April 6, 2007

For: WIRELESS COMMUNICATION
METHOD AND APPARATUS FOR
COORDINATING NODE-B'S AND
SUPPORTING ENHANCED UPLINK
TRANSMISSIONS DURING HANDOVER

REQUEST FOR CERTIFICATE OF CORRECTION

Certificate of Corrections Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

A Certificate of Correction under 35 U.S.C. §§ 254, 255 and 37 C.F.R. §§1.322, 1.323 is requested for U.S. Patent No. 7,046,648. Correction of the following errors is requested.

ON THE FACE PAGE

At section (56), OTHER PUBLICATIONS, right column, page 1, line 1, before "C.S0002," delete "GPP2" and insert therefor --3GPP2--.

04/10/2007 CCHAUI 00000077 090435 7046648
01 FC:1811 100.00 DA

APR 12 2007

Patentee: Zhang et al.
Patent No.: 7,046,648

IN THE SPECIFICATION

At column 5, line 6, after "UE", delete "transmission" and insert therefor --
transmissions--.

IN THE CLAIMS

At claim 1, column 8, line 42, after the word "designating", insert --a--.

APR 12 2007

Patentee: Zhang et al.
Patent No.: 7,046,648

REMARKS

Patentees believe that the above errors are of such a nature as to justify the issuance of a Certificate of Correction. Patentees have enclosed a completed Certificate of Correction Form PTO/SB/44.

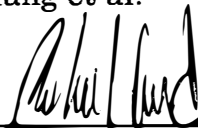
Since at least one of the errors was caused by Applicants, please charge the surcharge fee of \$100.00 to the Deposit Account of InterDigital Communications Corporation, Deposit Account No. 09-0435.

Patentees respectfully request that the Certificate of Correction be issued.

Respectfully submitted,

Zhang et al.

By



Robert D. Leonard
Registration No. 57,204
(215) 568-6400

Volpe and Koenig, P.C.
United Plaza, Suite 1600
30 South 17th Street
Philadelphia, PA 19103

RDL/dcb

APR 12 2007

UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 1 of 1

PATENT NO. : 7,046,648

APPLICATION NO.: 10/962,720

ISSUE DATE : May 16, 2006

INVENTOR(S) : Zhang et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

ON THE FACE PAGE

At section (56), OTHER PUBLICATIONS, right column, page 1, line 1, befc "C.S0002," delete "GPP2" and insert therefor --3GPP2--.

IN THE SPECIFICATION

At column 5, line 6, after "UE", delete "transmission" and insert therefor --transmissions--.

IN THE CLAIMS

At claim 1, column 8, line 42, after the word "designating", insert --a--.

MAILING ADDRESS OF SENDER (Please do not use customer number below):

Volpe and Koenig, P.C.
United Plaza, Suite 1600
30 South 17th Street
Philadelphia, PA 19103

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

APR 12 2007

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,046,648 B2
APPLICATION NO. : 10/962720
DATED : May 16, 2006
INVENTOR(S) : Zhang et al.

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

ON THE TITLE PAGE, ITEM -56-

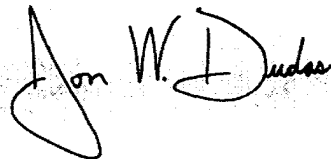
OTHER PUBLICATIONS, right column, page 1, line 1, before "C.S0002," delete "GPP2" and insert therefor --3GPP2--.

At column 5, line 6, after "UE" delete "transmission" and insert therefor --transmissions--.

At claim 1, column 8, line 42, after the word "designating", insert --a--.

Signed and Sealed this

Fifteenth Day of May, 2007

A handwritten signature in black ink, appearing to read "Jon W. Dudas". The signature is stylized with a large, looped initial "J" and a cursive "Dudas".

JON W. DUDAS
Director of the United States Patent and Trademark Office