UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 8,995,357 B2
APPLICATION NO. : 12/664347
DATED : March 31, 2015
INVENTOR(S) : Dahlman et al.

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

On Page 2, in Item (56), under "OTHER PUBLICATIONS", in Column 2, Lines 10-11, delete "(E-Utra) and Evolved Universal Terrestrial Radio Access network (E-UTAN);" and insert -- (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); --, therefor.

In the Specification

In Column 6, Line 23, delete "RNTI1." and insert -- RNTI1, --, therefor.

Signed and Sealed this
Twentieth Day of November, 2018

Andrei Iancu
Director of the United States Patent and Trademark Office

PTO/SB/44 (09-07)
Approved for use through 01/31/2020. OMB 0651-0033
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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(Also Form PTO-1050)

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 8,995,357 B2

APPLICATION NO. : 12/664,347

ISSUE DATE : March 31, 2015

INVENTOR(S) : Dahlman, 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 Page 2, in Field (56), under "OTHER PUBLICATIONS", in Column 2, Lines 10-11, delete "(E-Utra) and Evolved Universal Terrestrial Radio Access network (E-UTAN);" and insert - - (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); - -, therefor.

In Column 6, Line 23, delete "RNTI1." and insert - - RNTI1, - -, therefor.

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

6300 Legacy, MS EVR 1-C-11
Plano, TX 75024
972-583-8656

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	12664347
Filing Date:	11-Dec-2009
Title of Invention:	TRANSMISSION OF SYSTEM INFORMATION ON A DOWNLINK SHARED CHANNEL
First Named Inventor/Applicant Name:	Erik Dahlman
Filer:	Roger Scott Burleigh/Amber Rodgers
Attorney Docket Number:	4015-6727 / P24241-US2

Filed as Large Entity

Filing Fees for U.S. National Stage under 35 USC 371

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
CERTIFICATE OF CORRECTION	1811	1	150	150

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**150**

Electronic Acknowledgement Receipt	
EFS ID:	33396507
Application Number:	12664347
International Application Number:	
Confirmation Number:	1464
Title of Invention:	TRANSMISSION OF SYSTEM INFORMATION ON A DOWNLINK SHARED CHANNEL
First Named Inventor/Applicant Name:	Erik Dahlman
Customer Number:	24112
Filer:	Roger Scott Burleigh/Amber Rodgers
Filer Authorized By:	Roger Scott Burleigh
Attorney Docket Number:	4015-6727 / P24241-US2
Receipt Date:	07-AUG-2018
Filing Date:	11-DEC-2009
Time Stamp:	13:51:05
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$150
RAM confirmation Number	080818INTEFSW00000099501379
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	P24241-US2_2018-08-07_CoC_Request_Letter.pdf	143113 2ac03a454b615273bdd4b16112f55938906c881c	no	3
Warnings:					
Information:					
2	Request for Certificate of Correction	P24241-US2_2018-08-07_CoC_PTO-1050.pdf	107647 75037b7e50318de42f9d7813f7a5688e10ce7ffb	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30679 66dc4e2c4ac86cb2ee192f68bf426725fcd4f698	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	281439		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF: U.S. Patent No. 8,995,357

USPTO CONFIRMATION CODE: 1464

APPLICATION NO.: 12/664,347

PCT FILED: April 10, 2008

U.S. FILED: December 11, 2009

EXAMINER: Un C Cho

GROUP ART UNIT: 2413

FOR: TRANSMISSION OF SYSTEM INFORMATION ON A DOWNLINK SHARED CHANNEL

37 CFR 1.322 & 37 CFR 1.323 REQUEST FOR CERTIFICATE OF CORRECTION FOR USPTO AND/OR APPLICANT MISTAKE

HONORABLE COMMISSIONER OF PATENTS & TRADEMARKS

SIR:

The following is a request for a certificate of correction in Serial Number 12/664,347, now Patent Number 8,995,357.

A certificate of correction under 35 USC 254 is respectfully requested in the above-identified patent.

The errors were the fault of both the applicant and USPTO and, accordingly, please charge **$150.00** to our Deposit Account No. 50-1379. In the event that a further fee is required, please charge the amount to the same Deposit Account.

The exact locations where the errors appear in the patent and patent application are as follows:

On Page 2, in Field (56), under "OTHER PUBLICATIONS", in Column 2, Lines 10-11, delete "(E-Utra) and Evolved Universal Terrestrial Radio Access network (E-UTAN);" and insert - - (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); - -, therefor.
(LIST OF REFERENCES CITED BY APPLICANT AND CONSIDERED BY EXAMINER DATED DECEMBER 20, 2011, SHEET 2 (PAGE 248 OF FW), UNDER "NON-PATENT LITERATURE DOCUMENTS", ENTRY 5, LINES 2-3)

In Column 6, Line 23, delete "RNTI1." and insert - - RNTI1, - -, therefor.
(ORIGINALLY FILED SPECIFICATION DATED DECEMBER 11, 2009, PAGE 7 (PAGE 356 OF FW), LINE 8)

The requested corrections are attached on Form PTO 1050.

Respectfully Submitted

, 2018

/Ronald J. Ward,Reg#54870/

DATE

Ronald J. Ward
Registration No. 54,870
Attorney of Record

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/664,347	03/31/2015	8995357	4015-6727 / P24241-US2	1464

24112 7590 03/11/2015

COATS & BENNETT, PLLC
1400 Crescent Green, Suite 300
Cary, NC 27518

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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

The Patent Term Adjustment is 337 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

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 of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Erik Dahlman, Bromma, SWEDEN;
Vera Vukajlovic, Stockholm, SWEDEN;

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
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 as 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" for maintenance fee notifications.

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

24112 7590 11/25/2014
COATS & BENNETT, PLLC
1400 Crescent Green, Suite 300
Cary, NC 27518

Note: A certificate of mailing can only be used for domestic mailings of the 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.

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.
12/664,347	12/11/2009	Erik Dahlman	4015-6727 / P34241-US2	1464

TITLE OF INVENTION: TRANSMISSION OF SYSTEM INFORMATION ON A DOWNLINK SHARED CHANNEL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	02/25/2015

EXAMINER	ART UNIT	CLASS-SUBCLASS
LIU, SIMING	2413	370-336000

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 Coats and Bennett, PLLC
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: Telefonaktiebolaget LM Ericsson (Publ)

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Stockholm, SE

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 submitted:
☒ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies .....

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☒ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 18-1167 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
☐ Applicant certifying micro entity status. See 37 CFR 1.29
NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
☐ Applicant asserting small entity status. See 37 CFR 1.27
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
☐ Applicant changing to regular undiscounted fee status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature David Bennett Date 2/19/2015
Typed or printed name David E. Bennett Registration No. 32,194

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Electronic Patent Application Fee Transmittal

Application Number:	12664347
Filing Date:	11-Dec-2009
Title of Invention:	TRANSMISSION OF SYSTEM INFORMATION ON A DOWNLINK SHARED CHANNEL
First Named Inventor/Applicant Name:	Erik Dahlman
Filer:	David E. Bennett/Donna Donovan
Attorney Docket Number:	4015-6727 / P24241-US2

Filed as Large Entity

Filing Fees for U.S. National Stage under 35 USC 371

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	1501	1	960	960

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**960**

Electronic Acknowledgement Receipt	
EFS ID:	21536878
Application Number:	12664347
International Application Number:	
Confirmation Number:	1464
Title of Invention:	TRANSMISSION OF SYSTEM INFORMATION ON A DOWNLINK SHARED CHANNEL
First Named Inventor/Applicant Name:	Erik Dahlman
Customer Number:	24112
Filer:	David E. Bennett/Donna Donovan
Filer Authorized By:	David E. Bennett
Attorney Docket Number:	4015-6727 / P24241-US2
Receipt Date:	19-FEB-2015
Filing Date:	11-DEC-2009
Time Stamp:	10:59:25
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Electronic Funds Transfer
Payment was successfully received in RAM	$960
RAM confirmation Number	19301
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	Issue_Fee_Transmittal.pdf	545648 ffaf8cd100d778a8f06898e2e248822d6ef4be50	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30851 f5cdee2d9ec690656bfac5d28266956afcf04210	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	576499		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

OK TO ENTER: /S.L./

11/18/2014

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of **Dahlman**	
Serial No.: **12/664,347**	
Filed: **December 11, 2009**	Examiner: Xavier S. Wong
For: **Transmission of System Information on a Downlink Shared Channel**	Group Art Unit: 2462
Docket No: **4015-6727**	Confirmation No.: 1464

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

SUPPLEMENTAL AFTER-FINAL RESPONSE IN-RESPONSE TO ADVISORY ACTION

This paper is being filed in response to the Final Office Action mailed May 20, 2014. Reconsideration is respectfully requested in light of the remarks below. The Office is hereby authorized to charge any fees required for entry of this paper to Deposit Account 18-1167.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	59111	(370/311,328-334,468.ccls. or 455/422.1.ccls.)	US-PGPUB; USPAT	OR	OFF	2014/11/18 12:35
L2	22594	(370/311,328-334,468.ccls. or 455/422.1.ccls.) and @ad<"20070618"	US-PGPUB; USPAT	OR	OFF	2014/11/18 12:36
L4	30	L2 and RNTI same (schedul$5 SU SU$2) and (repeat$3 repetitive recurr$5 overlap$5)	US-PGPUB; USPAT	OR	OFF	2014/11/18 12:37
L5	0	L2 and RNTI and (window system information)	US-PGPUB; USPAT	ADJ	OFF	2014/11/18 12:38
L6	50	L2 and RNTI and (system information)	US-PGPUB; USPAT	ADJ	OFF	2014/11/18 12:38
L7	151	((Erik) near2 (Dahlman)).INV.	US-PGPUB; USPAT	OR	OFF	2014/11/18 12:39
L8	14	((Vera) near2 (Vukajlovic)).INV.	US-PGPUB; USPAT	OR	OFF	2014/11/18 12:39

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L9	65	((Erik) near2 (Dahlman)).INV.	USPAT; UPAD	OR	OFF	2014/11/18 12:39
L10	5	((Vera) near2 (Vukajlovic)).INV.	USPAT; UPAD	OR	OFF	2014/11/18 12:39
L12	0	(RNTI and windows near5 spanning).clm.	USPAT; UPAD	OR	OFF	2014/11/18 12:41
L14	13	(Radio Network Temporary identifier and window).clm.	USPAT; UPAD	ADJ	ON	2014/11/18 12:41

11/18/2014 12:42:44 PM

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12664347	DAHLMAN ET AL.
	Examiner	Art Unit
	SIMING LIU	2413

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	11/18/2014								
1	1	=								
2	2	=								
3	3	=								
4	4	=								
-	5	-								
5	6	=								
6	7	=								
7	8	=								
8	9	=								
9	10	=								
-	11	-								
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18	22	=								
19	23	=								
20	24	=								
21	25	=								
22	26	=								
-	27	-								
-	28	-								
-	29	-								
-	30	-								
23	31	=								
24	32	=								

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12664347	DAHLMAN ET AL.
	Examiner	**Art Unit**
	SIMING LIU	2413

CPC						
Symbol					**Type**	**Version**
H04L		1	/	08	F	2013-01-01
H04L		2001	/	0093	A	2013-01-01
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CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

/SIMING LIU/ Examiner.Art Unit 2413	11/18/2014	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	24	
/UN C CHO/ Supervisory Patent Examiner.Art Unit 2413	11/19/2014	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	5

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12664347	DAHLMAN ET AL.
	Examiner	Art Unit
	SIMING LIU	2413

US ORIGINAL CLASSIFICATION						INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS					CLAIMED						NON-CLAIMED				
370	329					H	0	4	W	4 / 00 (2009.01.01)						
CROSS REFERENCE(S)																
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)															
370	311	330	332	334	469											
455	422.1															

/SIMING LIU/ Examiner.Art Unit 2413	11/18/2014	Total Claims Allowed:	
(Assistant Examiner)	(Date)	24	
/UN C CHO/ Supervisory Patent Examiner.Art Unit 2413	11/19/2014	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	5

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12664347	DAHLMAN ET AL.
	Examiner	**Art Unit**
	SIMING LIU	2413

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	-	17												
2	2	14	18												
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4	4	16	20												
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10	12	-	28												
11	13	-	29												
-	14	-	30												
12	15	23	31												
13	16	24	32												

/SIMING LIU/ Examiner.Art Unit 2413 (Assistant Examiner)	11/18/2014 (Date)	**Total Claims Allowed:** 24	
/UN C CHO/ Supervisory Patent Examiner.Art Unit 2413 (Primary Examiner)	11/19/2014 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 5

U.S. Patent and Trademark Office

Part of Paper No. 20141118A

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12664347	DAHLMAN ET AL.
	Examiner	Art Unit
	Xavier Szewai Wong	2413

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
370	311,328-334,468	11/18/2014	SL
455	422.1	11/18/2014	SL

SEARCH NOTES		
Search Notes	Date	Examiner
EAST image, class and keyword search in USPAT, US-PGPUB, DERWENT, EPO, JPO, and IBM_TDB (please see search history)	2011.12.17	/XSW/
Inventor Name and Assignee search in PALM and EAST	2011.12.17	/XSW/
EAST combined subclass, image and text search: 370/311,328-334,468 and 455/422.1	2011.12.17	/XSW/
Updated Searches Above	2012.09.30	/XSW/
Updated Searches Above	2013.08.23	/XSW/
update: ABOVE	11/18/2014	SL

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
see search printout		11/18/2014	SL

/SIMING LIU/ Examiner.Art Unit 2413	

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
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NOTICE OF ALLOWANCE AND FEE(S) DUE

24112 7590 11/25/2014

COATS & BENNETT, PLLC
1400 Crescent Green, Suite 300
Cary, NC 27518

EXAMINER
LIU, SIMING

ART UNIT	PAPER NUMBER
2413	

DATE MAILED: 11/25/2014

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/664,347	12/11/2009	Erik Dahlman	4015-6727 / P24241-US2	1464

TITLE OF INVENTION: TRANSMISSION OF SYSTEM INFORMATION ON A DOWNLINK SHARED CHANNEL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	02/25/2015

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE 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.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to 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 of 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
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 as 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" for maintenance fee notifications.

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

24112 7590 11/25/2014
COATS & BENNETT, PLLC
1400 Crescent Green, Suite 300
Cary, NC 27518

Note: A certificate of mailing can only be used for domestic mailings of the 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.

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.
12/664,347	12/11/2009	Erik Dahlman	4015-6727 / P24241-US2	1464

TITLE OF INVENTION: TRANSMISSION OF SYSTEM INFORMATION ON A DOWNLINK SHARED CHANNEL

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	02/25/2015

EXAMINER	ART UNIT	CLASS-SUBCLASS
LIU, SIMING	2413	370-336000

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

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
❑ A check is enclosed.
❑ Payment by credit card. Form PTO-2038 is attached.
❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
❑ Applicant certifying micro entity status. See 37 CFR 1.29
NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
❑ Applicant asserting small entity status. See 37 CFR 1.27
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
❑ Applicant changing to regular undiscounted fee status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/664,347	12/11/2009	Erik Dahlman	4015-6727 / P24241-US2	1464

24112 7590 11/25/2014

COATS & BENNETT, PLLC
1400 Crescent Green, Suite 300
Cary, NC 27518

EXAMINER	
LIU, SIMING	

ART UNIT	PAPER NUMBER
2413	

DATE MAILED: 11/25/2014

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

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of 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 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B 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, 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, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 12/664,347	Applicant(s) DAHLMAN ET AL.	
	Examiner SIMING LIU	Art Unit 2413	AIA (First Inventor to File) Status No

-- 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 *09/19/2014*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-4, 6-10, 12-13, 15-16, 18-26, 31-32*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   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.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ 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. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 12/11/2009
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/SIMING LIU/ Examiner, Art Unit 2413	/UN C. CHO/ Supervisory Patent Examiner, Art Unit 2413

The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

Allowable Subject Matter

1. Claims 1-4, 6-10, 12-13, 15-16, 18-26, 31-32 are allowed.

2. The following is an examiner's statement of reasons for allowance:

With respect to claim 1, 10, 12, 15, 21, the prior art, either alone or in combination, fails to teach the feature of "transmitting system information on the downlink shared channel in recurring time windows, each time window spanning a plurality of subframes; including an indicator to indicate to receiving user equipment that the subframe carries system information and wherein the indicator is a System information Radio Network Temporary Identifier (SI-RNTI)".

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SIMING LIU whose telephone number is (571)270-3859. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Un Cho can be reached on (571)272-7919. 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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SIMING LIU/
Examiner, Art Unit 2413

/UN C. CHO/
Supervisory Patent Examiner, Art Unit 2413

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	
	Filing Date	
	First Named Inventor	Dahlman
	Art Unit	
	Examiner Name	
	Attorney Docket Number	4015-6727

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] ¡	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	1799003	EP	A1	2007-06-20	Matsushita Electric Industrial Co., Ltd.		☐
	2	2007/052917	WO	A1	2007-05-10	LG Electronics, Inc.		☐
If you wish to add additional Foreign Patent Document citation information please click the Add button								Add

NON-PATENT LITERATURE DOCUMENTS	Remove

EFS Web 2.1.10 ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.L./

Receipt date: 12/11/2009	Application Number	12664347 - GAU: 2413
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Filing Date	
	First Named Inventor	Dahlman
	Art Unit	
	Examiner Name	
	Attorney Docket Number	4015-6727

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	3RD GENERATION PARTNERSHIP PROJECT. "System Information Scheduling and Change Notification." 3GPP TSG-RAN2 Meeting #58, Tdoc R2-071912, Kobe, Japan, 7-11 May 2007.	☐
	2	3RD GENERATION PARTNERSHIP PROJECT. "Draft Text Proposal Capturing Agreements on System Information." 3GPP TSG-RAN2 Meeting #58, Tdoc R2-072205, Kobe, Japan, 7-11 May 2007.	☐
	3	3RD GENERATION PARTNERSHIP PROJECT. "Transmission of Dynamic System Information." 3GPP TSG-RAN2 Meeting #58bis, R2-072543, Orlando, FL, US, 25-29 June 2007.	☐
	4	3RD GENERATION PARTNERSHIP PROJECT. "Transmission of Dynamic System Information." 3GPP TSG-RAN2 Ad-hoc Meeting, Tdoc R2-075559, Vienna, Austria, 13-14 December 2007.	☐
	5	3RD GENERATION PARTNERSHIP PROJECT. 3GPP TS 36.300 V8.0.0 (2007-03). 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access network (E-UTAN); Overall description; Stage 2 (Release 8).	☐

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/Siming Liu/	Date Considered	11/18/2014

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.L./

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of **Dahlman**	)	
Serial No.: **12/664,347**	)	
Filed: **December 11, 2009**	)	Examiner: Xavier S. Wong
For: **Transmission of System Information on a Downlink Shared Channel**	)	Group Art Unit: 2462
Docket No: **4015-6727**	)	Confirmation No.: 1464

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

SUPPLEMENTAL AFTER-FINAL RESPONSE IN-RESPONSE TO ADVISORY ACTION

This paper is being filed in response to the Final Office Action mailed May 20, 2014. Reconsideration is respectfully requested in light of the remarks below. The Office is hereby authorized to charge any fees required for entry of this paper to Deposit Account 18-1167.

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method of transmitting system information on a downlink shared channel of a wireless communication network, comprising:

transmitting system information on the downlink shared channel in recurring time windows, each time window spanning a plurality of subframes;

dynamically selecting which subframes within a given time window are to be used for carrying the system information; and

including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information,

wherein the wireless communication network is configured for operation in accordance with 3GPP E-UTRA standards and wherein the indicator is a System information Radio Network Temporary Identifier (SI-RNTI).

2. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a contiguous set of subframes within the given time window.

3. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a non-contiguous set of subframes within the given time window.

4. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises

selecting which subframes to use for transmitting system information in view of competing transmission priorities associated with other control or data signaling.

5. (Canceled)

6. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using an end-of-system-information indicator in a last subframe of the given time window that carries system information.

7. (Original) The method of claim 1, further comprising varying window sizes of the recurring time windows.

8. (Original) The method of claim 1, further comprising dynamically configuring a window size for the recurring time windows.

9. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using different indicators corresponding to different types of system information, such that the indicator used for a particular subframe indicates the type of system information carried in that subframe.

10. (Currently amended) A network transmitter for transmitting system information on a downlink shared channel in a wireless communications network, the network transmitter configured to transmit system information in recurring time windows, each time window spanning a plurality of subframes; the network transmitter comprising a baseband processor configured to:

dynamically select which subframes on the downlink shared channel within a given time window are to be used for carrying system information; and

include an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information,

wherein the wireless communication network is configured for operation in accordance with 3GPP E-UTRA standards and wherein the indicator is a System information Radio Network Temporary Identifier (SI-RNTI).

11. (Canceled)

12. (Currently amended) A method of transmitting system information on a downlink shared channel structured as successive subframes, the method comprising:

transmitting system information on the downlink shared channel in regularly occurring time windows, each time window spanning a plurality of successive subframes;

dynamically selecting which subframes within the time windows are to be used for carrying system information;

indicating to receiving user equipment which subframes within the time windows carry system information, by including an indicator in each subframe within the time windows that carries system information,

wherein the wireless communication network is configured for operation in accordance with 3GPP E-UTRA standards and wherein the indicator is a System information Radio Network Temporary Identifier (SI-RNTI).

13. (Previously presented) The method of claim 12, wherein indicating to receiving user equipment which subframes within the time windows carry system information includes indicating the last subframe within each time window that carries system information, thereby allowing the receiving user equipment to cease monitoring for system information within each time window.

14. (Canceled)

15. (Currently amended) A method, in a mobile station, for receiving system information on a downlink shared channel from a network transmitter in a wireless communication network, the method comprising:

monitoring for the receipt of system information on the downlink shared channel in recurring time windows used for transmission of system information, each time window spanning a plurality of subframes, by monitoring, within each time window, each subframe for an indication indicating presence of system information in the subframe and reading system information from the subframe if such information is present; and

terminating monitoring at or before the end of the time window,

wherein the wireless communication network is configured for operation in accordance with 3GPP E-UTRA standards and wherein the indicator is a System information Radio Network Temporary Identifier (SI-RNTI).

16. (Currently amended) The method of claim 15, further comprising recognizing an end-of-system-information indicator in a subframe received within the time window and terminating monitoring for receipt of system information ~~with~~ within the time window in response.

17. (Canceled)

18. (Original) The method of claim 15, further comprising storing a default window size for monitoring for system information transmissions.

19. (Original) The method of claim 18, further comprising monitoring for system information transmissions based on a specified window size indicated in received information rather than the default window size.

20. (Previously presented) The method of claim 15, further comprising recognizing different types of system information based on recognizing different system information indicators in different subframes.

21. (Currently amended) A mobile station operative to receive system information on a downlink shared channel from a network transmitter in a wireless communications network, the mobile station comprising a baseband processor configured to:

monitor for the receipt of system information on the downlink shared channel in recurring time windows used for transmission of system information, each time window spanning a plurality of subframes, by monitoring within each time window, each subframe for an indication indicating presence of system

information in the subframe and read system information from the subframe if such information is present; and

terminate monitoring at or before the end of the time window,

wherein the wireless communication network is configured for operation in accordance with 3GPP E-UTRA standards and wherein the indicator is a System information Radio Network Temporary Identifier (SI-RNTI).

22. (Previously presented) The mobile station of claim 21, wherein the baseband processor is configured to recognize an end-of-system-information indicator in a subframe received within the time window and terminate monitoring for receipt of system information within the time window in response.

23. (Previously presented) The mobile station of claim 21, wherein the baseband processor is configured to adapt to variable window sizes used for the time window.

24. (Previously presented) The mobile station of claim 21, wherein the baseband processor is configured to monitor for system information transmissions based on a specified window size indicated in received information rather than a default window size.

25. (Previously presented) The mobile station of claim 21, wherein the baseband processor is configured to recognize different types of system information based on different system information indicators detected in different subframes.

26. (Previously presented) A method of transmitting system information on a downlink shared channel of a wireless communication network comprising:

transmitting system information in recurring time windows, each time window spanning a plurality of subframes;

dynamically selecting which subframes within a given time window are to be used for carrying the system information; and

including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information;

wherein the dynamically selecting comprises dynamically selecting subframes such that the same system information is assigned for transmission to different subframes in first and second consecutive time windows, with the different subframes occupying differing respective positions within their corresponding frames.

27.-30. (Canceled)

31. (Currently amended) A method of transmitting system information on a downlink shared channel of a wireless communication network configured for operation in accordance with 3GPP E-UTRA standards, the system information having a fixed part and a dynamic part, the method comprising:

transmitting the dynamic part of the system information on the downlink shared channel in recurring time windows, each time window spanning a plurality of subframes, and each time window being a predetermined time interval in one or more corresponding frames;

dynamically selecting which subframes within a given time window are to be used for carrying the dynamic part of the system information; wherein the selecting is such that subframes carrying the dynamic part of the system

information within a given frame are non-consecutive, such that a second subframe not carrying any of the system information is disposed between first and third subframes carrying the dynamic part of the system information;

including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

32. (Previously presented) A method of transmitting system information on a downlink shared channel of a wireless communication network configured for operation in accordance with 3GPP E-UTRA standards, the system information having a fixed part and a dynamic part, the method comprising:

transmitting the dynamic part of the system information in recurring time windows, each time window spanning a plurality of subframes, and each time window being a predetermined time interval in one or more corresponding frames;

dynamically selecting which subframes within the time windows are to be used for carrying the dynamic part of the system information; wherein the selecting is such that subframes carrying the dynamic part of the system information for a first time window begin at a first subframe for a first frame, and the subframes carrying the dynamic part of the system information for a second time window begin at a second subframe in a second frame, where the first and second subframes have different subframe indexes relative to their corresponding frame;

including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

REMARKS

Applicant appreciates the interview granted by the Examiner Xavier S. Wong on September 17, 2014. During the interview the amendment to claim 10 was discussed.

Independent claim 10 has been amended to incorporate limitations from allowable claim 27 and is therefore believed to be allowable for the same reasons as amended claim 1 (which incorporates allowable claim 27).

In response to the Final Office Action mailed May 20, 2014, Applicant amends independent claims 1, 12, 15 and 21 by incorporating the limitations of allowed claims 27, 28, 29 and 30 respectively. Accordingly it is believed that amended claims 1, 12, 15 and 21 are allowable.

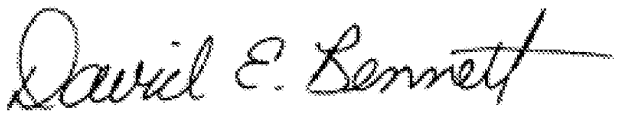
Claims 16 and 31 have been amended to correct minor typographical errors.

Claims 5, 11 and 27-30 have been canceled.

It is respectfully urged that the present application is in condition for allowance and notice to such effect is respectfully requested. If additional fees are required please charge them to Deposit Account No. 18-1167.

Respectfully submitted,

COATS & BENNETT, P.L.L.C.



Dated: September 18, 2014

David E. Bennett
Registration No.: 32,194
Telephone: (919) 854-1844

Electronic Patent Application Fee Transmittal	
Application Number:	12664347
Filing Date:	11-Dec-2009
Title of Invention:	Transmission of System Information on a Downlink Shared Channel
First Named Inventor/Applicant Name:	Erik Dahlman
Filer:	David E. Bennett/Donna Donovan
Attorney Docket Number:	4015-6727 / P24241-US2
Filed as Large Entity	

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 1 month with $0 paid	1251	1	200	200

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**200**

Electronic Acknowledgement Receipt	
EFS ID:	20173009
Application Number:	12664347
International Application Number:	
Confirmation Number:	1464
Title of Invention:	Transmission of System Information on a Downlink Shared Channel
First Named Inventor/Applicant Name:	Erik Dahlman
Customer Number:	24112
Filer:	David E. Bennett/Donna Donovan
Filer Authorized By:	David E. Bennett
Attorney Docket Number:	4015-6727 / P24241-US2
Receipt Date:	18-SEP-2014
Filing Date:	11-DEC-2009
Time Stamp:	10:37:59
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Electronic Funds Transfer
Payment was successfully received in RAM	$200
RAM confirmation Number	7914
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1		Supplemental_After_Final_Response.pdf	43182 e89db5ce64e7eff2ba7107fc03968de986ba29c8	yes	10

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Supplemental Response or Supplemental Amendment	1	1
	Claims	2	9
	Applicant Arguments/Remarks Made in an Amendment	10	10

Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30020 0bd7ec1db03f7fd0f158e9f4f4bcb4889074964b	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	73202		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 12/664,347	Filing Date 12/11/2009	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)		
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 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).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	09/18/2014	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 24	Minus	** 28	= 0	X $0 =	0
	Independent (37 CFR 1.16(h))	* 6	Minus	***6	= 0	X $0 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L 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.

LIE
/BONNIE COLE/

This collection of information is required by 37 CFR 1.16. 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.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/664,347	12/11/2009	Erik Dahlman	4015-6727 / P24241-US2	1464

24112 7590 08/05/2014

COATS & BENNETT, PLLC
1400 Crescent Green, Suite 300
Cary, NC 27518

EXAMINER	
WONG, XAVIER S	
ART UNIT	PAPER NUMBER
2413	

MAIL DATE	DELIVERY MODE
08/05/2014	PAPER

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

The time period for reply, if any, is set in the attached communication.

The present application is being examined under the pre-AIA first to invent provisions.

Response to Arguments

Applicant mentions R2-072205 (hereinafter, R2), Arundale, Dimou and Nguyen do not disclose "*dynamically selecting [the] subframe in a given time window used for transmitting system information*" as cited in claims 1, 10 and 12.

R2 section 7.4 and figure X show subframe(s) in given time window(s) for transmitting system information, but R2 does not explicitly discuss the "*dynamic selection*" of said "subframes" as claimed.

Dimou is introduced to explicitly show the *function* of "*dynamic selection of subframes*" in a given time window because paragraph 0039 mentions "this resource block allocation is valid for a *time window* and Node Bs can *allocate resources dynamically (e.g. even at a sub-frame level)* to their users."

In addition, Arundale highlights, in figure 3, subframes in windows being updated; along with figure 4 and column 8 lines 37-40 and 55-67 where they show "If it were possible to *dynamically allocate resources depending on the changing needs of the system over time throughout each phase… A sliding window is used to schedule reconfiguration* of a module to minimize impact to the overall system… *All windows beyond the committed window 340 can be both rescheduled and reallocated* to be a *different configuration* (e.g. systems information) than originally planned."

The examiner also considers the above functions/features "dynamic selection of subframes in given window used for transmitting system information."

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and *does not include knowledge gleaned only from the applicant's disclosure*, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xavier Szewai Wong whose telephone number is 571.270.1780. The examiner can normally be reached on Monday through Friday 11:30 am - 9:00 pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Un C. Cho can be reached on 571.272.7919. 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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800.786.9199 (IN USA OR CANADA) or 571.272.1000.

/Xavier Szewai Wong/
Primary Examiner, Art Unit 2413
1st August 2014

Advisory Action Before the Filing of an Appeal Brief	**Application No.** 12/664,347	**Applicant(s)** DAHLMAN ET AL.	
	Examiner Xavier Szewai Wong	**Art Unit** 2413	**AIA (First Inventor to File) Status** No

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

THE REPLY FILED 21st July 2014 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☒ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:
   a) ☐ The period for reply expires _____months from the mailing date of the final rejection.
   b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
   c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection. The current period for reply expires months from the mailing date of *the prior Advisory Action* or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.
   Examiner Note: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANT'S FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☐ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
   b) ☐ They raise the issue of new matter (see NOTE below);
   c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.
   NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).
4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☒ For purposes of appeal, the proposed amendment(s): (a) ☐ will not be entered, or (b) ☒ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
9. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
10. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
11. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

12. ☐ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: _____.
13. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____
14. ☐ Other: _____.

STATUS OF CLAIMS

15. The status of the claim(s) is (or will be) as follows:
    Claim(s) allowed: 26-32.
    Claim(s) objected to: .
    Claim(s) rejected: 1-13,15,16 and 18-25.
    Claim(s) withdrawn from consideration: .

/Xavier Szewai Wong/
Primary Examiner, Art Unit 2413

ENTER, /XSW/, 2014.08.01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: **Dahlman**	)	
Serial No.: **12/664,347**	)	
Filed: **December 11, 2009**	)	Examiner: Xavier S. Wong
For: **Transmission of System Information on a Downlink Shared Channel**	)	Group Art Unit: 2462
Docket No: **4015-6727**	)	Confirmation No.: 1464

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

AFTER FINAL RESPONSE

This paper is being filed in response to the Final Office Action mailed May 20, 2014. Reconsideration is respectfully requested in light of the amendments and remarks below. The Office is hereby authorized to charge any fees required for entry of this paper to Deposit Account 18-1167.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: **Dahlman**	)	
Serial No.: **12/664,347**	)	
Filed: **December 11, 2009**	)	Examiner: Xavier S. Wong
For: **Transmission of System Information on a Downlink Shared Channel**	)	Group Art Unit: 2462
Docket No: **4015-6727**	)	Confirmation No.: 1464

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

AFTER FINAL RESPONSE

This paper is being filed in response to the Final Office Action mailed May 20, 2014. Reconsideration is respectfully requested in light of the amendments and remarks below. The Office is hereby authorized to charge any fees required for entry of this paper to Deposit Account 18-1167.

LISTING OF CLAIMS

1. (Previously presented) A method of transmitting system information on a downlink shared channel of a wireless communication network, comprising:

transmitting system information on the downlink shared channel in recurring time windows, each time window spanning a plurality of subframes;

dynamically selecting which subframes within a given time window are to be used for carrying the system information; and

including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

2. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a contiguous set of subframes within the given time window.

3. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a non-contiguous set of subframes within the given time window.

4. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting which subframes to use for transmitting system information in view of competing transmission priorities associated with other control or data signaling.

5. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries

system information comprises using an RNTI (Radio Network Temporary Identifier) to denote that the subframe carries system information.

6. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using an end-of-system-information indicator in a last subframe of the given time window that carries system information.

7. (Original) The method of claim 1, further comprising varying window sizes of the recurring time windows.

8. (Original) The method of claim 1, further comprising dynamically configuring a window size for the recurring time windows.

9. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using different indicators corresponding to different types of system information, such that the indicator used for a particular subframe indicates the type of system information carried in that subframe.

10. (Previously presented) A network transmitter for transmitting system information on a downlink shared channel in a wireless communications network, the network transmitter configured to transmit system information in recurring time windows, each time window spanning a plurality of subframes; the network transmitter comprising a baseband processor configured to:

dynamically select which subframes on the downlink shared channel within a given time window are to be used for carrying system information; and

include an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

11. (Previously presented) The network transmitter of claim 10:

wherein the network transmitter comprises a radio base station configured for operation in accordance with 3GPP E-UTRA standards;

wherein the indicator is a Radio Network Temporary Identifier (RNTI).

12. (Previously presented) A method of transmitting system information on a downlink shared channel structured as successive subframes, the method comprising:

transmitting system information on the downlink shared channel in regularly occurring time windows, each time window spanning a plurality of successive subframes;

dynamically selecting which subframes within the time windows are to be used for carrying system information;

indicating to receiving user equipment which subframes within the time windows carry system information, by including an indicator in each subframe with the time windows that carries system information.

13. (Previously presented) The method of claim 12, wherein indicating to receiving user equipment which subframes within the time windows carry system information includes indicating the last subframe within each time window that carries system information, thereby allowing the receiving user equipment to cease monitoring for system information within each time window.

14. (Cancelled)

15. (Previously presented) A method, in a mobile station, for receiving system information on a downlink shared channel from a network transmitter in a wireless communication network, the method comprising:

monitoring for the receipt of system information on the downlink shared channel in recurring time windows used for [[the]] transmission of system information, each [[said]] time window spanning a plurality of subframes, by monitoring within each time window, each subframe for an indication indicating presence of system information in the subframe and reading system information from the subframe if such information is present; and

terminating monitoring at or before the end of the time window.

16. (Previously presented) The method of claim 15, further comprising recognizing an end-of-system-information indicator in a subframe received within the time window and terminating monitoring for receipt of system information with the time window in response.

17. (Cancelled)

18. (Original) The method of claim 15, further comprising storing a default window size for monitoring for system information transmissions.

19. (Original) The method of claim 18, further comprising monitoring for system information transmissions based on a specified window size indicated in received information rather than the default window size.

20. (Previously presented) The method of claim 15, further comprising recognizing different types of system information based on recognizing different system information indicators in different subframes.

21. (Previously presented) A mobile station operative to receive system information on a downlink shared channel from a network transmitter in a wireless communications network, the mobile station comprising a baseband processor configured to:

monitor for the receipt of system information on the downlink shared channel in recurring time windows used for transmission of system information, each [[said[[time window spanning a plurality of subframes, by monitoring within each time window, each subframe for an indication indicating presence of

system information in the subframe and read system information from the subframe if such information is present; and

terminate monitoring at or before the end of the time window.

22. (Previously presented) The mobile station of claim 21, wherein the baseband processor is configured to recognize an end-of-system-information indicator in a subframe received within the time window and terminate monitoring for receipt of system information within the time window in response.

23. (Previously presented) The mobile station of claim 21, wherein the baseband processor is configured to adapt to variable window sizes used for the time window.

24. (Previously presented) The mobile station of claim 21, wherein the baseband processor is configured to monitor for system information transmissions based on a specified window size indicated in received information rather than a default window size.

25. (Previously presented) The mobile station of claim 21, wherein the baseband processor is configured to recognize different types of system information based on different system information indicators detected in different subframes.

26. (Previously presented) A method of transmitting system information on a downlink shared channel of a wireless communication network comprising:

transmitting system information in recurring time windows, each time window spanning a plurality of subframes;

dynamically selecting which subframes within a given time window are to be used for carrying the system information; and

including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information;

wherein the dynamically selecting comprises dynamically selecting subframes such that the same system information is assigned for transmission to different subframes in first and second consecutive time windows, with the different subframes occupying differing respective positions within their corresponding frames.

27. (Previously presented) The method of claim 1:

wherein the wireless communication network is configured for operation in accordance with 3GPP E-UTRA standards;

wherein the indicator is a System Information Radio Network Temporary Identifier (SI-RNTI).

28. (Previously presented) The method of claim 12:

wherein the transmitting the system information comprises transmitting the system information in accordance with 3GPP E-UTRA standards;

wherein the indicator is a System Information Radio Network Temporary Identifier (SI-RNTI).

29. (Previously presented) The method of claim 15:

wherein the wireless communication network is configured for operation in accordance with 3GPP E-UTRA standards;

wherein the indication is a System Information Radio Network Temporary Identifier (SI-RNTI).

30. (Previously presented) The method of claim 21:

wherein the wireless communication network is configured for operation in accordance with 3GPP E-UTRA standards;

wherein the indication is a System Information Radio Network Temporary Identifier (SI-RNTI).

31. (Previously presented) A method of transmitting system information on a downlink shared channel of a wireless communication network configured for operation in accordance with 3GPP E-UTRA standards, the system information having a fixed part and a dynamic part the method comprising:

transmitting the dynamic part of the system information on the downlink shared channel in recurring time windows, each time window spanning a plurality of subframes, and each time window being a predetermined time interval in one or more corresponding frames;

dynamically selecting which subframes within a given time window are to be used for carrying the dynamic part of the system information; wherein the selecting is such that subframes carrying the dynamic part of the system information within a given frame are non-consecutive, such that a second subframe not carrying any of the system information is disposed between first and third subframes carrying the dynamic part of the system information;

including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

32. (Previously presented) A method of transmitting system information on a downlink shared channel of a wireless communication network configured for operation in accordance with 3GPP E-UTRA standards, the system information having a fixed part and a dynamic part, the method comprising:

transmitting the dynamic part of the system information in recurring time windows, each time window spanning a plurality of subframes, and each time window being a predetermined time interval in one or more corresponding frames;

dynamically selecting which subframes within the time windows are to be used for carrying the dynamic part of the system information; wherein the selecting is such that subframes carrying the dynamic part of the system information for a first time window begin at a first subframe for a first frame, and the subframes carrying the dynamic part of the system information for a second time window begin at a second subframe in a second frame, where the first and second subframes have different subframe indexes relative to their corresponding frame;

including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

REMARKS

The indication by the Examiner that claims 26-32 recite allowable subject matter is greatly appreciated. However, Applicant believes that pending claims 1-25 are also allowable and therefore requests reconsideration of this application.

The claimed invention relates to dynamic selection of subframes for system information on a downlink shared channel. The claims recite a “recurring time window” spanning a number of subframes in which the system information is transmitted. One aspect of the invention is dynamically selecting which subframes in the time window are to be used for transmitting system information. Another aspect of the claim invention is "including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information."

Independent claims 1, 10 and 12 are rejected under 35 U.S.C §103 as being obvious over R2-072205 in view of Arundale (US 7675852) and further in view of Dimou (US 20090121057) and Nguyen (US 20060034245). It is respectfully submitted that the cited prior art fails to disclose dynamically selecting the subframes in a given time window used for transmitting system information as recited in claims 1, 10 and 12.

R2-072205 discloses a method of transmitting system information on the downlink. The system information is divided into scheduling units (SUs). Each SU comprises a group of system information with the same periodicity. The most frequently transmitted SU is referred to as SU-1 and is transmitted with a fixed periodicity. Subsequent SUs (e.g., SU-2, SU-3, etc) may be transmitted with different periodicity. All SUs are transmitted in the same subframe as SU-1 or in consecutive subframes. R2-072205 does not disclose dynamically selecting the subframes in a given time window used for transmitting system information or including an indicator in each subframe that carries system information. Rather, the transmission scheme in R2-072205 relies on a fixed schedule for system information.

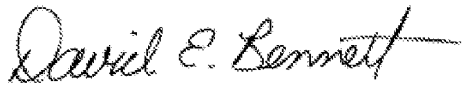
Arundale is cited for disclosing a time window spanning multiple subframes. Dimou.is cited for disclosing dynamically selecting subframes for transmission of system information. Nguyen is cited solely for disclosing a downlink shared channel. None of these secondary references are related to transmission of system information and therefore do not cure the deficiency of R2-07220 because there is no reason, other than hindsight, for combining the references. Therefore, it is submitted that claims 1, 10 and 12 are allowable over the cited art.

Independent claims 15 and 21 are rejected under §103 over R2/Arundale/Dimou and further in view of Love (US 2004/0219917) and Cheng et al (US 7,680,507). It is respectfully submitted that the cited prior art fails to disclose including a system information indicator in each subframe that carries system information as recited in claims 15 and 21.

As noted above, R2-072205 discloses transmission of system information according to a fixed schedule. R2-072205 does not disclose including a system information indicator in each subframe that carries system information. The Examiner cites Love as disclosing a system information indicator. However, the indicator in Love is not for indicating the presence of system information. Further, there is not reason to include such indicator in R2-072205 because the fixed scheduling eliminates the need for an indicator because user equipment already knows what subframes carry the system information. Therefore, it is submitted that claims 15 and 21 are allowable over the cited art.

For the forgoing reasons, it is respectfully urged that the present application is in condition for allowance and notice to such effect is respectfully requested.

Respectfully submitted,
COATS & BENNETT, P.L.L.C.



Dated: July 21, 2014

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Electronic Acknowledgement Receipt	
EFS ID:	19634248
Application Number:	12664347
International Application Number:	
Confirmation Number:	1464
Title of Invention:	Transmission of System Information on a Downlink Shared Channel
First Named Inventor/Applicant Name:	Erik Dahlman
Customer Number:	24112
Filer:	David E. Bennett/Donna Donovan
Filer Authorized By:	David E. Bennett
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Application Type:	U.S. National Stage under 35 USC 371

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Response_to_After_Final_Office_Action.pdf	54874 3a8ba104f182d224e4285d797ed07b0708898519	yes	14

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Response After Final Action	1	1
	Claims	2	11
	Applicant Arguments/Remarks Made in an Amendment	12	14
Warnings:			
Information:			
	Total Files Size (in bytes):	54874	

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 12/664,347	Filing Date 12/11/2009	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)		
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 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).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	07/21/2014	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 28	Minus	** 28	= 0	X $80 =	0
	Independent (37 CFR 1.16(h))	* 6	Minus	***6	= 0	X $420 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L 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.

LIE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/664,347	12/11/2009	Erik Dahlman	4015-6727 / P24241-US2	1464

24112 7590 05/20/2014
COATS & BENNETT, PLLC
1400 Crescent Green, Suite 300
Cary, NC 27518

EXAMINER	
WONG, XAVIER S	
ART UNIT	PAPER NUMBER
2413	

MAIL DATE	DELIVERY MODE
05/20/2014	PAPER

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

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	12/664,347	DAHLMAN ET AL.	
	Examiner	Art Unit	
	Xavier Szewai Wong	2413	

-- 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) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, 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 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 *28th January 2014*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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

5)☒ Claim(s) *1-13,15,16 and 18-32* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-13,15,16 and 18-25* is/are rejected.

8)☒ Claim(s) *26-32* is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ 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).

12)☐ 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

13)☐ 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)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

The present application is being examined under the pre-AIA first to invent provisions.

Allowable Subject Matter

Claims 26 – 32 are allowed over the prior art of record.

Response to Arguments

Applicant's arguments/amendments to claims 1 – 25 have been considered but are not persuasive.

Applicant is not convinced that neither R2-072205 (R2), Arundale nor Dimou, individually or combined, teaches "transmitting system information in recurring time windows, each time window spanning a plurality of subframes… [and]… including indicator in each of the selected subframes to indicate to the receiving user equipment that the subframe carries system information" and "dynamically selecting … subframes."

The examiner maintains that R2 that the system information are in recurring time windows because in figure x "multi-frame/scheduling period" shows section 3, 19, 37 and 131 SUs are recurring according to the SUs shown above. The examiner also maintains "indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information" is taught in section 7.4 where it describes SB value tag in each SU because they show "minimum UE capability restricts BCCH mapped to DL-SCH, e.g regarding maximum rate" which is an "indicator" form.

The examiner maintains that Arundale teaches "each time window spanning a plurality of subframes" because Arundale further discloses "as one sub-frame expires it

becomes a past frame and the current window slides to become new current window and include the first sub-frame of the previously committed window; the number of sub-frames and frame size is given above as a generic example and is therefore not limited to those sizes" in column 9 lines 8-15.

The examiner also maintains that secondary reference Dimou shows "*dynamically* select[ing] which subframes within a given time window are to be used for carrying system information because Dimou paragraph 0039 mentions "this resource block allocation is valid for a time window and *Node Bs can allocate resources dynamically* (e.g. even at a sub-frame level) to their users. For the users within a given inner or outer sector zone, the assignment is done among the resource blocks granted from the central Node B for this specific zone."

The examiner recognizes that obviousness may be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992), and *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007).

Also, although the claims are interpreted in light of the specification, *limitations from the specification are not read into the claims*. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1 – 4 and 7 – 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Draft Text Proposal Capturing Agreements on System Information" (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale) and Dimou et al (US 2009/0131057 A1, Dimou), and in further view of Nguyen (US 2006/0034245 A1).

1. R2-072205 teaches a method of transmitting system information on the downlink shared channel of a wireless communication network (sec 7.4 downlink system) comprising: transmitting system information in recurring time windows (fig. x: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); dynamically selecting which subframes within a given time window are to be used for carrying the system information (sec 7.4 – An SU may be segmented, in which case segments are scheduled… eNB may schedule more than one SU in a subframe); and including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information (sec 7.4 – SB value tag in each SU).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.
R2-072205/Arundale/Dimou may not have explicitly mentioned said transmission of said system information is "on downlink shared channel" as amended. Nguyen teaches transmitting system information on a downlink shared channel ([0047]: high speed physical downlink shared channel (HS-PDSCH) transmission if a part of the HS-SCCH subframe or a part of its associated HS-PDSCH subframe overlaps with a downlink transmission gap on the associated DPCH). It would

have been obvious to one of ordinary skill in the art when the invention was made to modify the transmission method of R2-072205/Arundale/Dimou into that as taught by Nguyen to identify a transmission gap in a downlink transmission from a base station and suspend high speed data packet reception by the user equipment during the reception suspension period (Nguyen, [0012] and [0015]).

10. R2-072205 teaches a network transmitter for transmitting system information on a downlink shared channel in a wireless communications network, the network transmitter configured to comprising a baseband processor (fig. 5.4.1.2) generate system information in recurring time windows (fig. x: SU-1, SU-2 and SU-3 are in a same subframe and are recurring), the network transmitter comprising a baseband processor configured to: include an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information (sec 7.4 – SB value tag in each SU).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
R2-072205, modified by Arundale, *may not have explicitly* mentioned "*dynamically* select which subframes within a given time window are to be used for carrying system information.
Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.
R2-072205/Arundale/Dimou may not have explicitly mentioned said transmission of said system information is "on downlink shared channel" as amended. Nguyen teaches transmitting system information on a downlink shared channel ([0047]: high speed physical downlink shared channel (HS-PDSCH) transmission if a part of the HS-SCCH subframe or a part of its associated HS-PDSCH subframe overlaps with a downlink transmission gap on the associated DPCH). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the transmission method of R2-072205/Arundale/Dimou into that as taught by Nguyen to identify a transmission gap in a downlink transmission from a base station and suspend high speed data packet reception by the user equipment during the reception suspension period (Nguyen, [0012] and [0015]).

12. R2-072205 teaches a method of transmitting system information on a downlink shared channel structured as successive subframes (fig. 5.4.1.2 and fig. x), the method comprising: transmitting system information in regularly occurring time windows (fig. x: SU-1, SU-2 and SU-3 are in a same subframe and are recurring), (fig. x: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); and indicating to receiving user equipment which subframes within a given time window carry system information (sec 7.4 – SB value tag in each SU).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of successive subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
R2-072205, modified by Arundale, may not have explicitly depicted "*dynamically* selecting which subframes within a given time window are to be used for carrying system information."
Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.
R2-072205/Arundale/Dimou may not have explicitly mentioned said transmission of said system information is "on downlink shared channel" as amended. Nguyen teaches transmitting system information on a downlink shared channel ([0047]: high speed physical downlink shared channel (HS-PDSCH) transmission if a part of the HS-SCCH subframe or a part of its associated HS-PDSCH subframe overlaps with a downlink transmission gap on the associated DPCH). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the transmission method of R2-072205/Arundale/Dimou into that as taught by Nguyen to identify a transmission gap in a downlink transmission from a base station and suspend high speed data packet reception by the user equipment during the reception suspension period (Nguyen, [0012] and [0015]).

Claims 15, 18, 21 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Draft Text Proposal Capturing Agreements on System Information" (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale), and Dimou et al (US

2009/0131057 A1, Dimou) and Love et al (US 2004/0219917 A1, Love), and in further view of Cheng et al (US 7,680,507 B2, Cheng).

15. R2-072205 teaches a method for a mobile station for receiving system information on a downlink shared channel from a network transmitter in a wireless communication network (fig. 5.4.1.2: UE), the method comprising: monitoring for the receipt of system information in recurring time windows used for the transmission of system information (fig. x: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); within each time window, monitoring each subframe for an indication of system information and reading system information from the signal subframe if such information is present (sec 7.4 – SB value tag in each SU); and terminating monitoring at least at the end of the time window (if there are no more subframes to be monitored, it is only reasonable to terminate monitoring).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of successive subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
R2-072205, modified by Arundale, may not have explicitly depicted "*dynamically* selecting which subframes within a given time window are to be used for carrying system information."
Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.
While R2-072205/Arundale/Dimou mention said system information, they *may not have explicitly* mentioned "presence indication" of said system information.
Love mentions presence indication of system information in subframe ([0071]: one TFCI bit (EU indication bit) out of one of the slots per frame or sub-frame is used to indicate the presence or absence of the EU field while the other bits in each TFCI field of the remaining slots per frame or sub-frame are still used to represent the TFCI). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the presence indication of system information as taught by Love to the downlink shared channel information subframe of R2-072205/Arundale/Dimou for soft handoff.
R2-072205/Arundale/Dimou/Love may not have explicitly mentioned said monitoring receipt of

said system information "on a downlink shared channel" as amended.
Cheng teaches function of monitoring receipt of system information on a downlink shared channel (claim 14: receiving, at a mobile station, at least a portion of a downlink shared channel shared by a plurality of mobiles and having a plurality of subframes, each subframe comprising a plurality of slots, each slot including a power control part composed of power control bits for the plurality of mobiles, a data status part and a data part). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the reception method of R2-072205/Arundale/Dimou/Love to the function as taught by Cheng to reduce use of channelization codes (Cheng, col. 1 lines 55-59).

21. R2-072205 teaches a mobile station operative to receive system information on a downlink channel from a network transmitter in a wireless communications network, the mobile station comprising a baseband processor (fig. 5.4.1.2: UE) operable to: monitor for the receipt of system information in recurring time windows used for the transmission of system information (fig. x: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); within each time window, monitor each subframe for an indication of system information and reading system information from the signal subframe if such information is present (fig. x: SIB); and terminate monitoring at least at the end of the time window (if there are no more subframes to be monitored, it is only reasonable to terminate monitoring).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of successive subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
R2-072205, modified by Arundale, may not have explicitly depicted "*dynamically* selecting which subframes within a given time window are to be used for carrying system information."
Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.
While R2-072205/Arundale/Dimou mention said system information, they *may not have explicitly* mentioned "presence indication" of said system information.
Love mentions presence indication of system information in subframe ([0071]: one TFCI bit (EU indication bit) out of one of the slots per frame or sub-frame is used to indicate the presence or absence of the EU field while the other bits in each TFCI field of the remaining slots per frame or sub-frame are still used to represent the TFCI). It would

have been obvious to one of ordinary skill in the art when the invention was made to implement the presence indication of system information as taught by Love to the downlink shared channel information subframe of R2-072205/Arundale/Dimou for soft handoff.
R2-072205/Arundale/Dimou/Love may not have explicitly mentioned said monitoring receipt of said system information "on a downlink shared channel" as amended.
Cheng teaches function of monitoring receipt of system information on a downlink shared channel (claim 14: receiving, at a mobile station, at least a portion of a downlink shared channel shared by a plurality of mobiles and having a plurality of subframes, each subframe comprising a plurality of slots, each slot including a power control part composed of power control bits for the plurality of mobiles, a data status part and a data part). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the reception method of R2-072205/Arundale/Dimou/Love to the function as taught by Cheng to reduce use of channelization codes (Cheng, col. 1 lines 55-59).

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2. R2-072205 teaches the method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a contiguous set of subframes within the given time window (fig. x: subframes 3 and 131).

3. R2-072205 teaches the method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a non-contiguous set of subframes within the given time window (fig. x: subframes 19 and 67).

4. R2-072205 teaches the method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting which subframes to use for transmitting system information in view of competing transmission priorities associated with other control or data signaling (fig. x: SIB).

7. R2-072205 teaches the method of claim 1, further comprising varying window sizes of the recurring time windows (fig. x: SU-1, SU-2 and SU-3 have different sizes).

8. R2-072205 teaches the method of claim 1, further comprising dynamically configuring a window size for the recurring time windows (sec. 7.4 – MIB paragraph).

9. R2-072205 teaches the method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using different indicators corresponding to different types of system information (sec 7.4 – MIB paragraph), such that the indicator used for

a particular subframe indicates the type of system information carried in that subframe (sec 7.4 – SIB).

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11. R2-072205 teaches the network transmitter of claim 10, wherein the network transmitter comprises a radio base station configured for operation in accordance with 3GPP E-UTRA standards (3GPP TSG-RAN2).

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18. R2-072205 teaches the method of claim 15, further comprising storing a default window size for monitoring for system information transmissions (fig. x: SU-1, SU-2 and SU-3 have default sizes).

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25. R2-072205 teaches the mobile station of claim 21, wherein the baseband processor is operable to recognize different types of system information based on different system information indicators detected in different subframes (fig. x: SIB-a,b,c,d,e).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over “Draft Text Proposal Capturing Agreements on System Information” (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale), Dimou et al (US 2009/0131057 A1, Dimou) and Nguyen (US 2006/0034245 A1) (hereinafter R2-072205 etc.), applied to claim 1, and in further view of “System Information Scheduling and Change Notification” (R2-071912).

5. R2-072205 etc. teaches the method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information; R2-072205 etc. does not very explicitly show it comprises using an RNTI (Radio Network Temporary Identifier) to denote that the subframe carries system information. R2-071912 explicitly teaches subframes indicators are in RNTI format (page 3 bottom). It would have been obvious to one of ordinary skill in the art when the invention was made to understand that both R2 documents refer to the same

3GPP systems information techniques and the R2-072205 (primary reference), while being silent on its application to the indications, also uses RNTI.

Claims 19, 20, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over “Draft Text Proposal Capturing Agreements on System Information” (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale), Dimou et al (US 2009/0131057 A1, Dimou), Love et al (US 2004/0219917 A1, Love) and Nguyen (US 2006/0034245 A1) (hereinafter R2-072205); and in further view of Marinier et al (US 2008/0225765 A1, Marinier).

19. R2-072205 etc. teaches the method of claim 18; R2-072205 etc. does not explicitly mention further comprising monitoring for system information transmissions based on a specified window size indicated in received information rather than the default window size. Marinier teaches monitoring for system information transmissions based on a specified window size indicated in received information rather than a default window size ([0457]: if window size is changed for reordering purpose, then it is only reasonable that the changing window sizes are monitored). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 etc. to allow configurable window sizes to facilitate reordering procedure.

20. R2-072205 etc. teaches the method of claim 15; R2-072205 etc. does not explicitly mention further comprising recognizing different types of system information based on recognizing different system information indicators in different signal subframes. Marinier teaches recognizing different types of system information based on recognizing different system information indicators in different signal subframes ([0457]: if window size is changed for reordering purpose, then it is only reasonable that the changing window sizes are recognized). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 etc. to allow configurable window sizes to facilitate reordering procedure.

23. R2-072205 etc. teaches the mobile station of claim 21; R2-072205 etc. may not have explicitly mentioned wherein the baseband processor is operable to adapt to changing or configurable window sizes used for the time window. Marinier teaches changing or configurable window sizes used for the time window ([0457]). It would have been obvious to one of ordinary skill in the art when the invention was made to modify

the method in R2-072205 etc. to allow configurable window sizes to facilitate reordering procedure.

24. R2-072205 etc. teaches the mobile station of claim 21; R2-072205 etc. does not explicitly mention wherein the baseband processor is operable to monitor for system information transmissions based on a specified window size indicated in received information rather than a default window size. Marinier teaches monitoring for system information transmissions based on a specified window size indicated in received information rather than a default window size ([0457]: if window size is changed for reordering purpose, then it is only reasonable that the changing window sizes are monitored). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 etc. to allow configurable window sizes to facilitate reordering procedure.

Claims 6, 13, 16 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over “Draft Text Proposal Capturing Agreements on System Information” (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale), and in further view of Dimou et al (US 2009/0131057 A1, Dimou) (hereinafter R2-072205 etc.); and in further view of Kashima et al (US 2007/0217362 A1, Kashima).

6. R2-072205 etc. teaches the method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information; R-072205 etc. do not explicitly shows it includes using an end-of-system-information indicator in a last subframe of the given time window that carries system information. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information (0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 etc. to maintain flexibility of scheduling.

13. R2-072205 etc. teaches the method of claim 12; R-072205 etc. does not explicitly shows wherein indicating to receiving user equipment which subframes within a given time window carry system information includes indicating the last subframe within the given time window that carries system information, thereby allowing the receiving user equipment to cease monitoring for system information within the given time window. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information so to cease monitoring within a given time

(0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 etc. for flexibility of scheduling subframes.

16. R2-072205 etc. teaches the method of claim 15; R-072205 etc. does not explicitly shows it further comprising recognizing an end-of-system-information indicator in a signal subframe received within the time window and terminating monitoring for the time window in response. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information (0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 to maintain flexibility of scheduling.

22. R2-072205 etc. teaches the mobile station of claim 21; R-072205 etc. does not explicitly shows wherein the baseband processor is operable to recognize an end-of-system-information indicator in a signal subframe received within the time window and terminate monitoring for the time window in response. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information (0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 etc. to maintain flexibility of scheduling.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, this action is made FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xavier Wong whose telephone number is (571)270-1780. The examiner can normally be reached on Monday through Friday 11:30 am - 9:00 pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Un C. Cho can be reached on 571-272-7919. 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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800.786.9199 (IN USA OR CANADA) or 571.272.1000.

/Xavier Szewai Wong/
Primary Examiner, Art Unit 2413
17th May 2014

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12664347	DAHLMAN ET AL.
	Examiner	Art Unit
	Xavier Szewai Wong	2413

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
EAST image, class and keyword search in USPAT, US-PGPUB, DERWENT, EPO, JPO, and IBM_TDB (please see search history)	2011.12.17	/XSW/
Inventor Name and Assignee search in PALM and EAST	2011.12.17	/XSW/
EAST combined subclass, image and text search: 370/311,328-334,468 and 455/422.1	2011.12.17	/XSW/
Updated Searches Above	2012.09.30	/XSW/
Updated Searches Above	2013.08.23	/XSW/

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	2	"20090131057".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2014/05/17 20:52
L2	2	"7675852".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2014/05/17 20:56
L3	1	L2 and window same sub$1frame	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2014/05/17 21:02
L4	8	re$1cur$5 with window same sub$1frame	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2014/05/17 21:06
L5	0	370/311,328,334,468.ccls. and L4	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2014/05/17 21:07

EAST Search History (Interference)

<This search history is empty>

5/17/2014 9:08:00 PM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of **Dahlman**	)	
Serial No.: **12/664,347**	)	Examiner: Xavier S. Wong
Filed: **December 11, 2009**	)	Group Art Unit: 2462
For: **Transmission of System Information on a Downlink Shared Channel**	)	Confirmation No.: 1464
Docket No: **4015-6727**	)	

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

28 January 2014

RESPONSE TO OFFICE ACTION

This paper is being filed in response to the Office Action mailed 28 August 2013. Reconsideration is respectfully requested in light of the amendments and remarks below. **Suitable claim fees are submitted herewith along with fees for a two-month extension of time.** The Office is hereby authorized to charge any fees required for entry of this paper to Deposit Account 18-1167.

AMENDMENTS TO THE CLAIMS

1. (Previously presented) A method of transmitting system information on a downlink shared channel of a wireless communication network, comprising:

transmitting system information on the downlink shared channel in recurring time windows, each time window spanning a plurality of subframes;

dynamically selecting which subframes within a given time window are to be used for carrying the system information; and

including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

2. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a contiguous set of subframes within the given time window.

3. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a non-contiguous set of subframes within the given time window.

4. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting which subframes to use for transmitting system information in view of competing transmission priorities associated with other control or data signaling.

5. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries

system information comprises using an RNTI (Radio Network Temporary Identifier) to denote that the subframe carries system information.

6. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using an end-of-system-information indicator in a last subframe of the given time window that carries system information.

7. (Original) The method of claim 1, further comprising varying window sizes of the recurring time windows.

8. (Original) The method of claim 1, further comprising dynamically configuring a window size for the recurring time windows.

9. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using different indicators corresponding to different types of system information, such that the indicator used for a particular subframe indicates the type of system information carried in that subframe.

10. (Previously presented) A network transmitter for transmitting system information on a downlink shared channel in a wireless communications network, the network transmitter configured to transmit system information in recurring time windows, each time window spanning a plurality of subframes; the network transmitter comprising a baseband processor configured to:

dynamically select which subframes on the downlink shared channel within a given time window are to be used for carrying system information; and

include an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

11. (Currently amended) The network transmitter of claim 10[[,]]:

wherein the network transmitter comprises a radio base station configured for operation in accordance with 3GPP E-UTRA standards;

wherein the indicator is a Radio Network Temporary Identifier (RNTI).

12. (Currently amended) A method of transmitting system information on a downlink shared channel structured as successive subframes, the method comprising:

transmitting system information on the downlink shared channel in regularly occurring time windows, each time window spanning a plurality of successive subframes;

dynamically selecting which subframes within ~~a given time window~~ the time windows are to be used for carrying system information;

indicating to receiving user equipment which subframes within ~~a given time window~~ the time windows carry system information, by including an indicator in each subframe with the time windows that carries system information.

13. (Currently amended) The method of claim 12, wherein indicating to receiving user equipment which subframes within ~~a given time window~~ the time windows carry system information includes indicating the last subframe within ~~the given~~ each time window that carries system information, thereby allowing the receiving user equipment to cease monitoring for system information within ~~the given~~ each time window.

14. (Cancelled)

15. (Currently amended) A method, in a mobile station, for receiving system information on a downlink shared channel from a network transmitter in a wireless communication network, the method comprising:

monitoring for the receipt of system information on the downlink shared channel in recurring time windows used for [[the]] transmission of system information, each [[said]] time window spanning a plurality of subframes[[;]], by monitoring within each time window, ~~monitoring~~ each subframe for an indication ~~of the~~ indicating presence of system information in the subframe and reading system information from the subframe if such information is present; and

terminating monitoring ~~at least~~ at or before the end of the time window.

16. (Currently amended) The method of claim 15, further comprising recognizing an end-of-system-information indicator in a subframe received within the time window and terminating monitoring for receipt of system information with the time window in response.

17. (Cancelled)

18. (Original) The method of claim 15, further comprising storing a default window size for monitoring for system information transmissions.

19. (Original) The method of claim 18, further comprising monitoring for system information transmissions based on a specified window size indicated in received information rather than the default window size.

20. (Previously presented) The method of claim 15, further comprising recognizing different types of system information based on recognizing different system information indicators in different subframes.

21. (Currently amended) A mobile station operative to receive system information on a downlink shared channel from a network transmitter in a wireless communications network, the mobile station comprising a baseband processor configured to:

monitor for the receipt of system information on the downlink shared channel in recurring time windows used for [[the]] transmission of system information, each [[said[[time window spanning a plurality of subframes[[;]], by monitoring within each time window, ~~monitor~~ each subframe for an indication ~~of the~~

indicating presence of system information in the subframe and read system information from the subframe if such information is present; and

terminate monitoring ~~at least~~ at or before the end of the time window.

22. (Currently amended) The mobile station of claim 21, wherein the baseband processor is configured to recognize an end-of-system-information indicator in a subframe received within the time window and terminate monitoring for receipt of system information within the time window in response.

23. (Previously presented) The mobile station of claim 21, wherein the baseband processor is configured to adapt to variable window sizes used for the time window.

24. (Previously presented) The mobile station of claim 21, wherein the baseband processor is configured to monitor for system information transmissions based on a specified window size indicated in received information rather than a default window size.

25. (Previously presented) The mobile station of claim 21, wherein the baseband processor is configured to recognize different types of system information based on different system information indicators detected in different subframes.

26. (Currently amended) ~~The method of claim 1~~ A method of transmitting system information on a downlink shared channel of a wireless communication network comprising:

transmitting system information in recurring time windows, each time window spanning a plurality of subframes;

dynamically selecting which subframes within a given time window are to be used for carrying the system information; and

including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information;

wherein the dynamically selecting comprises dynamically selecting subframes such that the same system information is assigned for transmission to different subframes in first and second consecutive time windows, with the different subframes occupying differing respective positions within their corresponding frames.

27. (New) The method of claim 1:

wherein the wireless communication network is configured for operation in accordance with 3GPP E-UTRA standards;

wherein the indicator is a System Information Radio Network Temporary Identifier (SI-RNTI).

28. (New) The method of claim 12:

wherein the transmitting the system information comprises transmitting the system information in accordance with 3GPP E-UTRA standards;

wherein the indicator is a System Information Radio Network Temporary Identifier (SI-RNTI).

29. (New) The method of claim 15:

wherein the wireless communication network is configured for operation in accordance with 3GPP E-UTRA standards;

wherein the indication is a System Information Radio Network Temporary Identifier (SI-RNTI).

30. (New) The method of claim 21:

wherein the wireless communication network is configured for operation in accordance with 3GPP E-UTRA standards;

wherein the indication is a System Information Radio Network Temporary Identifier (SI-RNTI).

31. (New) A method of transmitting system information on a downlink shared channel of a wireless communication network configured for operation in accordance with 3GPP E-UTRA standards, the system information having a fixed part and a dynamic part the method comprising:

transmitting the dynamic part of the system information on the downlink shared channel in recurring time windows, each time window spanning a plurality of subframes, and each time window being a predetermined time interval in one or more corresponding frames;

dynamically selecting which subframes within a given time window are to be used for carrying the dynamic part of the system information; wherein the selecting is such that subframes carrying the dynamic part of the system information within a given frame are non-consecutive, such that a second subframe not carrying any of the system information is disposed between first and third subframes carrying the dynamic part of the system information;

including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

32. (New) A method of transmitting system information on a downlink shared channel of a wireless communication network configured for operation in accordance with 3GPP E-UTRA standards, the system information having a fixed part and a dynamic part, the method comprising:

transmitting the dynamic part of the system information in recurring time windows, each time window spanning a plurality of subframes, and each time window being a predetermined time interval in one or more corresponding frames;

dynamically selecting which subframes within the time windows are to be used for carrying the dynamic part of the system information; wherein the selecting is such that subframes carrying the dynamic part of the system information for a first time window begin at a first subframe for a first frame, and the subframes carrying the dynamic part of the system information for a second time window begin at a second subframe in a second frame, where the first and second subframes have different subframe indexes relative to their corresponding frame;

including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

REMARKS

Claim Amendments

Claims 11-13, 15-16, 21-22, 26 have been amended, and claim 27-32 has been added. Support for these amendments is found throughout the specification and drawings, *see*, *e.g.*, Figs. 2-3 and accompanying text; page 4, line 15 to page 5, line 6; page 5, lines 14-26; page 1, lines 5-9; page 1, lines 19-34.

These amendments do not introduce new matter.

Clarification of Record on Finality of Action

Applicant notes that the current Action is the first Action after an RCE. Applicant further notes that the Office Action Summary indicates that the Action is non-final. However Conclusion section of the Action indicates that the Action is final. Applicant believes that the Examiner intended to make the Action non-final, because to do otherwise would be contrary to the MPEP. As such, Applicant understands that the present Action is ***non-final***, but requests clarification of the record on this point. If Applicant's understanding is incorrect, the Office is requested to telephone the undersigned immediately.

Allowable Subject Matter

Applicant notes with appreciation that claim 26 is indicated as being *allowable*. As such, Applicant has amended claim 26 to be independent form, including all the limitations of the corresponding base claim (claim 1) and any intervening claims (none).

Applicant submits that claim 26 is now in condition for allowance, as indicated in the Action.

§103 Claim Rejections

Claims 1-4, 7-12 stand rejected under §103 over R2-072205 (herein after "R2") in view of Arundale (US 7675852) and Dimou (US 20090121057), in further view of Nguyen (US 20060034245). Claims 5-6, 13, 15-16, 18-25 stands rejected under §103 over R2/Arundale/Dimou in combination with various tertiary references. For all rejections, the primary combination is R2/Arundale/Dimou. Applicant requests reconsideration.

As an initial matter, Applicant notes that the Examiner states that "applicant's arguments/amendments have been considered but are moot in [sic] the current new rejection grounds." This is clearly incorrect. For example, in rejecting claim 1, the Examiner previously rejected the claim based on R2/Arundale/Dimou, and now rejects the claim based on R2/Arundale/Dimou + Nguyen. However, Nguyen is used solely to address the added claim language "on the downlink shared channel," and all other portions of the claim are rejected using exactly the same logic as the prior rejections. Thus, the Examiner expressly uses the same logic to reject the same core claim language. Applicant's arguments in the prior response directly point out errors in the Examiner's logic. Despite this, the Examiner completely avoids addressing the substance of Applicant's arguments. Nowhere in the Action does the Examiner provide any rebuttal to Applicant's arguments. Such is improper. Applicant directs the Examiner's attention to MPEP §706.07's mandate that "The examiner should never lose

sight of the fact that in every case the applicant is entitled to a full and fair hearing, and that a clear issue between applicant and examiner should be developed, if possible, before appeal." Applicant submits that the Examiner's failure to directly address Applicant's arguments is therefore improper.

As a second general matter, Applicant notes that the Examiner's rationale in the Action continues to contain the phrase "may not have explicitly shown" in several locations. Applicant respectfully requests pursuant to MPEP §706.07 that the Examiner specifically state either 1) that the reference shows; or 2) that the reference does not show each asserted associated feature/element. Absent such explicit statements by the Examiner, Applicant will understand that the Examiner's phrase "may not have explicitly shown" is the Examiner's personal way of saying "does not show," and future prosecution (including Appeal) will be based on that understanding.

Independent claim 1 requires, *inter alia*, "transmitting system information on the downlink shared channel in recurring time windows, each time window spanning a plurality of subframes; [and] dynamically selecting which subframes within a given time window are to be used for carrying the system information. The Examiner relies primarily on R2 for the majority of these features; however, R2, with or without the other cited art, does not teach what the Examiner asserts it does, as explained below.

In the Action, the Examiner sets forth the following interpretation of R2 which the Examiner *expressly relies on* to make the §103 rejections:

1. The Scheduling Units (SU) of R2 are the claimed "time windows."
2. The SB value tag in R2 is the claimed "indicator."

Applicant submits that the R2 SUs are not "time windows", but are instead understood by one of skill in the art to be an amount of system information grouped into System Information Blocks (SIBs). In other words, SUs are understood to be a specific type of data (system information), which are then transmitted. Data is not a time window. Instead, one of skill in the art would understand that a subframe might be considered a time window (generically), or a collection of subframes (e.g., a frame) might be considered a time window, but the data itself is not a time window. Nevertheless, the discussion below will be in the context of the R2 SUs being time windows so that the errors in the Examiner's analysis can be discussed in terms that the Examiner used to make the rejections. Regardless of the correctness of the Examiner's terminology, R2 does not make the showings relied on to make the §103 rejections.

First, assuming *arguendo* that an SU is a "time window", R2 does not show "transmitting system information in recurring time windows, each time window spanning a plurality of subframes…[and] including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information." SU-1 is plainly shown in Fig. x as being only one subframe. Thus, SU-1 simply cannot be the claimed "time window" as it does not "span[] a plurality of subframes," as required by claim 1. In contrast, both SU-2 and SU-3 are shown as being multiple subframes in size. However, the SB value tag -- the putative "indicator" -- is not in SU-2 or SU-3. The Examiner has not identified anywhere in R2 that states that the SB is located anywhere other than in SU-1. Thus, the only SU that has the SB (i.e., SU-1) cannot be the claimed time window because it never spans multiple subframes and the SUs that span multiple subframes (SU-2 and SU-3) never contain the putative

"indicator." Thus, despite the Examiner's assertions to the contrary, R2 does not show "transmitting system information in recurring time windows, each time window spanning a plurality of subframes…[and] including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information," as claimed in claim 1.

Applicant notes that the Examiner points to the statement in R2 that "an SU may be segmented, in which case segments are scheduled in subsequent consecutive subframes." However, one of skill in the art understands that such statement only applies to SU-2 and SU-3, as these are the only multi-subframe SU's. There is no suggestion anywhere in R2 that SU-1 is multi-subframe.

Applicant also notes that the Examiner points to Arundale to show that "time windows" can span multiple subframes. The reliance on Arundale is baffling. R2 already shows that some putative "time windows" (SUs) can span multiple subframes, see SU-2 and SU-3. Thus, the concept of multiple subframe SUs is already present in R2. However, the R2 approach is fundamentally based on the notion that SU-1 will be only one subframe, and that this subframe will be in a known, non-varying location. Thus, the attempted combination of R2 and Arundale suffers from at least two defects: 1) the proffered reason of "to determine the sizes and number of frames" is a specious argument, as the R2 SU-1 necessarily has a fixed size and a fixed location (in the directly after the subframe carrying the BCH, with a fixed periodicity of 80 ms, see R2 §7.4); and 2) changing R2 so that SU-1 spans multiple subframes would alter the fundamental workings of R2 and render is unusable for its intended purpose. Thus, Arundale cannot properly cure this defect in R2.

Second, again assuming *arguendo* that an SU is a "time window", R2 does not show --despite the Examiner's express assertion to the contrary -- "dynamically selecting which subframes within a given time window are to be used for carrying the system information," as claimed in claim 1. SU-1 is plainly shown in Fig. x as being only one subframe. Thus, as noted above, SU-1 simply cannot be the claimed "time window" as it does not "span[] a plurality of subframes," as required by claim 1. Further, while both SU-2 and SU-3 are shown as being multiple subframes in size, neither uses any sort of "dynamic[] selecting [of] which subframes within a given time window are to be used for carrying the system information." Remember that claim 1 requires that all subframes carrying the system information include the "indicator," which the Examiner defines as the SB in R2. But, the SB is only carried in SU-1, and is never carried in SU-2 or SU-3. And, SU-1 is only in one subframe, and that subframe is in a predefined fixed location. There simply is no "dynamic selection" with respect to SU-1 in R2. As such, R2 simply does not show the claimed dynamic selection.

Applicant notes that the Examiner expressly states that R2 shows the claimed dynamic selection, but then states "R2 … *may not have explicitly* mentioned 'dynamically selecting which subframes within a given time window are to be used for carrying the system information,' " and then points to Dimou. In view of this vague language, Applicant requests pursuant to MPEP §760.07 that the Examiner either explicitly state that he is contending that R2 makes this showing, or explicitly admit that R2 does not make this showing and stop repeating language to the contrary in future explanations.

In order to advance prosecution, Applicant will also explain below why Dimou does not cure this lack of "dynamically selecting which subframes … system information" defect of R2 (alone or in combination with Arundale).

The Examiner points to the passage in Dimou ¶[0039] reading in part "this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users" (emphasis added). Read in the Dimou context, it is clear that this portion of Dimou is discussing dynamically allocating uplink resources -- from the mobile terminals to the base stations. Such allocation of uplink resources is unrelated to allocation of downlink resources, particularly downlink resources broadcast at all relevant mobile terminals on a shared downlink channel, as claimed. As such, whatever Dimou may teach about uplink resource allocation is irrelevant to the claimed method of transmitting system information on a downlink shared channel, and does not cure the dynamic selection defect of R2 noted above.

Applicant notes that the Examiner points to Nguyen ¶[0047] for a teaching of transmitting system information on a "downlink shared channel". The Examiner's reliance on Nguyen is baffling, because R2 already teaches sending system information on a downlink shared channel. The Examiner also points to Nguyen ¶[0012] and ¶[0015] and states that it would have been obvious to modify R2/Arundale/Dimou "to identify a transmission gap in the downlink transmission from the base station and suspend high speed data packet reception by the user equipment during the reception suspension period." Even assuming arguendo that such is true, so what? Whether the UE suspends data packet reception or not does nothing to cure the defects identified

above. Suspension or the lack of suspension does nothing to cure the defects in R2/Arundale/Dimou, nor has the Examiner attempted to explain how it conceivably could.

Independent claim 1 also requires "including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information." The Examiner identifies the putative "indicator" as the "value tag" discussed in R2. However, R2 specifically states in Section 7.4 line 5-14 that Value tags are carried on the BCH, "in a System Information Block called the Master Information Block (MIB)." Thus, these value tags are carried in the MIB, which Fig. x plainly shows is NOT part of SU-1, SU-2, or SU-3. Even setting this aside, and assuming that the "value tag" is somehow in the SB, R2 teaches that the SB is only present in SU-1, and SU-1 is only one sub-frame. Thus, there are simply not multiple subframes of the same "time window" in R2 that carry indicators. And the SB is present only in SU-1, and is expressly not present in SU-2 or SU-3. Thus, even if the R2 "value tag" is an indicator, R2 does not teach the claimed indicating portion of the method. And, nothing in the other cited art cures this defect.

In discussing claim 15, the Examiner points to Love (US 20040219917) for a potentially related teaching on "presence indication." However, Applicant notes that the EU field discussed in Love is directed to a single mobile station, and is not sent on downlink shared channel. More particularly, Love relates to a WCDMA system where an enhanced uplink dedicated transport channel (denoted E-DCH/EUDCH) is introduced. When the UE is scheduled for transmission (the UE transmitting in the uplink (UL)) on this channel, there is a need that the base stations transmit ACK/NACK

information to the UE to let the UE know whether or not the transmission on the UL has been received by the base station. Love achieves this signaling by introducing "an EU field", and an indicator to indicate the presence of this field to a specific UE regarding a transmission made by that UE, where the indicator is defined using "TFCI bits" (TFCI in WCDMA stands for Transport Format Combination Indicator (TFCI)). Thus, Love describes dedicated communication of feedback to specific UEs. Love has nothing to do with indicating to UEs that they should read system information transmitted (broadcasted) on a downlink *shared* channel intended for several/all UEs being served by the network transmitter. As such, whatever Love may teach about indications dedicated to a single mobile station situation is irrelevant to the method of claim 1, and does not cure the corresponding defect of R2 noted above. And, one of skill in the art would not use Love in combination with R2/Arundale/Dimou.

Important: Note that the argument in the following paragraph assumes that the "system information" necessarily includes the SB and the non-SB SIB information because if only the SB information is the "system information," the §103 rejections necessarily fail for other reasons outlined above (e.g., not multiple sub-frames, etc.).

Applicant also notes that R2 explicitly teaches that the SB is always broadcast in SU-1, and that SU-1 is always the "subframe following the one carrying BCH," (see R2 §7.4). Further, R2 teaches that "SU-1 is carried on the DL-SCH and uses a fixed schedule with a periodicity of 80 ms." From this it follows that there is no need for a value tag to indicate that a subframe contains SU-1, as SU-1 is always placed in the subframe directly following the subframe carrying the BCH, with a periodicity of 80 ms. At most, the SB value tag is indicating information about the *other* SUs, but not SU-1

itself. And, there would simply be no reason to indicate the presence of the "system information" in SU-1, because SU-1 always carries the SB and is always in a fixed time location (every 80ms). One of skill in the art would not add an indication of presence, when the "presence" is guaranteed to always be there. Thus, adding the "presence indication" of Love to R2/Arundale/Dimou would not make sense. And, without having the indication in every relevant subframe in the time window that carries the claimed system information, the combination would not read on the claimed device.

Applicant would like to emphasize this last point, which goes at a fundamental difference between the claimed approach and R2. R2 is fundamentally built on the idea that the system information will always be in a non-varying predicable subframe -- one directly after the BCH that, starts every 80ms, and continues contiguously as appropriate. Claim 1, in contrast, claims a method where the system information is dynamically placed in potentially varying subframes, which may or may not be contiguous. Thus, attempts to graft other teachings onto R2 in order to reach the subject matter of claim 1 must necessarily fundamentally alter the way R2 works, which is legally impressible to support a §103 rejection.

As pointed out above, R2/Arundale/Dimou fails to teach at least two limitations of claim 1. And, the recent addition of Nguyen does not cure these defects. As such, independent claim 1 defines over the proffered combination of R2/Arundale/Dimou + Nguyen, assuming *arguendo* that such combination is proper. Further, none of the other cited art (cited against the various dependent claims) cures these defects. Accordingly, independent claim 1 and its dependent claims define patentable subject matter over the cited art.

For claims 10-11, Applicant notes that independent claim 10 includes limitations identical or similar to the "dynamically selecting" and "including an indicator in each selected subframe" limitations found in claim 1. Accordingly, Applicant submits that independent claim 10 and its dependent claims define over the cited art for reasons similar to those discussed above with respect to independent claim 1.

For claims 12-13, Applicant notes that independent claim 12 includes "dynamically selecting" limitations identical or similar to those found in claim 1. Accordingly, Applicant submits that independent claim 12, and its dependent claims define over the cited art for reasons similar to those discussed above with respect to independent claim 1.

For claims 15-20, 21-25 Applicant notes that independent claim 15 requires "monitoring each subframe for an indication indicating presence of system information in the subframe and reading system information from the subframe if such information is present" while independent claim 21 likewise requires "monitor each subframe for an indication indicating presence of system information in the subframe and read system information from the subframe if such information is present." The claimed monitoring of each subframe in these claims is related to the "including an indicator in each selected subframe" limitation found in claim 1. As pointed out above, R2 does not show the "value tags" in each relevant subframe, but at most only in the SB. And the SB does not indicate present of system information in the subframe (SU-1) carrying the SB.

Nor does R2 suggest looking for "value tags" anywhere but in the SB. Therefore, R2 necessarily does not teach "monitoring" each subframe for the "value tags." Further, the "value tag" of R2 is not "an indication of the presence of system information." Thus, R2 cannot teach "monitor[ing] each subframe for an indication indicating presence of system information in the subframe and read[ing] system information from the subframe if such information is present," as claimed. And, as discussed above, the attempted reliance on Love is misplaced. As such, Applicant submits that independent claims 15 and 21, and their corresponding dependent claims, define over the cited art for reasons similar to those discussed above with respect to independent claim 1.

New Claims 31-32

With regard to all claims, it appears that the Examiner is construing the Scheduling Units (SU) of R2 as the claimed "time windows." While Applicant disagrees that such a construction is reasonable or consistent with the understanding of one of skill in the art, the balance of this response will assume *arguendo* that such construction is appropriate.

Applicant submits that new claims 31-32 are patentable over the cited art for at least the reasons generally discussed above with respect to claim 1. Additional reasons are set forth below.

With regard to new independent claim 31, the claim requires that each time window span a plurality of subframes. Further, each time window must be "a predetermined time interval in one or more corresponding frames." In addition, the claim requires dynamically selecting which subframes within a given time window are to

be used for carrying the system information, with the selecting being such that "subframes carrying the system information within a given frame are non-consecutive, such that a second subframe not carrying any of the system information is disposed between first and third subframes carrying the system information." It is undisputed that, in R2, the subframes carrying SU-1 to SU-3 for a given frame are contiguous. See, for example Fig. x. Likewise, it is undisputed subsequent transmissions of SU-1 (or SU-2 or SU-3) are necessarily occurring in different frames. Thus, within one frame, R2 at most teaches that the subframes carrying the system information are contiguous, not "non-consecutive" as claimed by claim 31. And, nothing in any of the other cited art cures this defect. As such, Applicant submits that independent claim 31, and its dependent claims, define patentable subject matter over the cited art.

With regard to new independent claim 32, this claim requires that each time window span a plurality of subframes. Further, each time window must be "a predetermined time interval in one or more corresponding frames." In addition, the claim requires dynamically selecting which subframes within a given time window are to be used for carrying the dynamic part of the system information, with the selecting being such that "subframes carrying the dynamic part of the system information for a first time window begin at a first subframe for a first frame, and subframes carrying the dynamic part of the system information for a second time window begin at a second subframe in a second frame, where the first and second subframes have different subframe indexes relative to their corresponding frame." In R2, the dynamic part of the system information is assumed to correspond to the collective data of SU-1, SU-2, and SU-3. It is undisputed that, in R2, the subframes carrying the collection of SU-1 to SU-3 always

begin at the same subframe - the subframe immediately following the one carrying the BCH, and that the BCH is always in the first subframe of a frame. Thus, in R2, the start of the system information is always in the second subframe (subframe 2) of a frame. In contrast, claim 32 requires that the dynamic part of the system information for at least two different time windows start in different subframes of at least two different frames. Thus, assuming the first frame starts its dynamic part of the system information in the second subframe (subframe 2), the second frame starts its dynamic part of the system information in the third subframe (subframe 3)(or the fourth subframe, or the fifth subframe…). Thus, the always-start-in-the-same-place approach of R2 does not teach the allowed-to-start-in-different-places approach of claim 32. And, nothing in any of the other cited art cures this defect. As such, Applicant submits that independent claim 32 defines patentable subject matter over the cited art.

Renewed Request for Clarification of the Record

In the Action, the Examiner continues to explicitly maintain that "SU-1, SU-2 and SU-3 are in the same subframe and are recurring," (see, e.g., Action page 3, lines 3-4) and bases the §103 rejections on this premise. For a discussion of how R2 makes it abundantly clear that SU-1, SU-2, and SU-3 are NOT in the same subframe, see the explanation provided in the Response of January 2013, and discussed above. Applicant notes that the Examiner, other than again *repeating verbatim* that R2 makes this showing, has not rebutted the substance of Applicant's arguments on this point. Pursuant to MPEP§706.07, Applicant request that the Examiner clearly state the Examiner's position on this characterization of R2, and provide an analysis identifying

any errors in Applicant's argument on this point. Because this "same subframe" assertion by the Examiner regarding R2 clearly forms a basis for one or more claim rejections, Applicant is entitled to an explanation of the Examiner's position on this point in view of Applicant's contrary explanation.

For the forgoing reasons, it is respectfully urged that the present application is in condition for allowance and notice to such effect is respectfully requested.

Respectfully submitted,
COATS & BENNETT, P.L.L.C.

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Electronic Patent Application Fee Transmittal	
Application Number:	12664347
Filing Date:	11-Dec-2009
Title of Invention:	Transmission of System Information on a Downlink Shared Channel
First Named Inventor/Applicant Name:	Erik Dahlman
Filer:	John R. Owen/Cora Fedornock
Attorney Docket Number:	4015-6727 / P24241-US2
Filed as Large Entity	

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	1615	3	80	240
Independent claims in excess of 3	1614	3	420	1260
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Extension - 2 months with $0 paid	1252	1	600	600
Miscellaneous:				
		Total in USD ($)		**2100**

Electronic Acknowledgement Receipt

EFS ID:	18041971
Application Number:	12664347
International Application Number:	
Confirmation Number:	1464
Title of Invention:	Transmission of System Information on a Downlink Shared Channel
First Named Inventor/Applicant Name:	Erik Dahlman
Customer Number:	24112
Filer:	John R. Owen/Cora Fedornock
Filer Authorized By:	John R. Owen
Attorney Docket Number:	4015-6727 / P24241-US2
Receipt Date:	28-JAN-2014
Filing Date:	11-DEC-2009
Time Stamp:	10:30:41
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Payment information:

Submitted with Payment	yes
Payment Type	Electronic Funds Transfer
Payment was successfully received in RAM	$2100
RAM confirmation Number	12477
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1		40156727RESPONSE.pdf	136568 21902ecc6d445659ce6ea5ac4cd4aec5680e1ab4	yes	26

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	11
	Applicant Arguments/Remarks Made in an Amendment	12	26

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	33282 74ebaacfe00c7c3124a381c41a9b88825707caae	no	2

Warnings:

Information:

Total Files Size (in bytes):	169850

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 12/664,347	Filing Date 12/11/2009	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)		
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 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).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	01/28/2014	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 28	Minus	** 25	= 3	X $80 =	240
	Independent (37 CFR 1.16(h))	* 6	Minus	***5	= 1	X $420 =	420
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	**660**

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L 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.

LIE
/PHYLLIS CANTY/

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/664,347	12/11/2009	Erik Dahlman	4015-6727 / P24241-US2	1464

24112 7590 08/28/2013
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EXAMINER	
WONG, XAVIER S	
ART UNIT	PAPER NUMBER
2413	
MAIL DATE	DELIVERY MODE
08/28/2013	PAPER

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

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	12/664,347	DAHLMAN ET AL.	
	Examiner	Art Unit	
	Xavier Szewai Wong	2413	

-- 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) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, 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 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 *16 March 2013*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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

5)☒ Claim(s) *1-13, 15, 16 and 18-25* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-13,15,16 and 18-25* is/are rejected.

8)☒ Claim(s) *26* is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ 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).

12)☐ 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

13)☐ 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)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 16th March 2013 has been entered.

Response to Arguments

Applicant's arguments/amendments have been considered but are moot in the current new rejection grounds.

Allowable Subject Matter

Claim **26** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including *all* of the limitations of the base claim and *all* intervening claims.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1 – 4 and 7 – 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Draft Text Proposal Capturing Agreements on System Information" (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale) and Dimou et al (US 2009/0131057 A1, Dimou), and in further view of Nguyen (US 2006/0034245 A1).

1. R2-072205 teaches a method of transmitting system information on the downlink shared channel of a wireless communication network (sec 7.4 downlink system) comprising: transmitting system information in recurring time windows (fig. x: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); dynamically selecting which subframes within a given time window are to be used for carrying the system information (sec 7.4 – An SU may be segmented, in which case segments are scheduled… eNB may schedule more than one SU in a subframe); and including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information (sec 7.4 – SB value tag in each SU).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.
R2-072205/Arundale/Dimou may not have explicitly mentioned said transmission of said system information is "on downlink shared channel" as amended. Nguyen teaches transmitting system information on a downlink shared channel ([0047]: high speed physical downlink shared channel (HS-PDSCH) transmission if a part of the HS-SCCH subframe or a part of its associated HS-PDSCH subframe overlaps with a downlink transmission gap on the associated DPCH). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the transmission method of R2-072205/Arundale/Dimou into that as taught by Nguyen to identify a transmission gap in a downlink transmission from a base station and suspend high speed data packet reception by the user equipment during the reception suspension period (Nguyen, [0012] and [0015]).

10. R2-072205 teaches a network transmitter for transmitting system information on a downlink shared channel in a wireless communications network, the network transmitter configured to comprising a baseband processor (fig. 5.4.1.2) generate system information in recurring time windows (fig. x: SU-1, SU-2 and SU-3 are in a same subframe and are recurring), the network transmitter comprising a baseband processor configured to: include an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information (sec 7.4 – SB value tag in each SU).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of

subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
R2-072205, modified by Arundale, *may not have explicitly* mentioned "*dynamically* select which subframes within a given time window are to be used for carrying system information.
Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.
R2-072205/Arundale/Dimou may not have explicitly mentioned said transmission of said system information is "on downlink shared channel" as amended. Nguyen teaches transmitting system information on a downlink shared channel ([0047]: high speed physical downlink shared channel (HS-PDSCH) transmission if a part of the HS-SCCH subframe or a part of its associated HS-PDSCH subframe overlaps with a downlink transmission gap on the associated DPCH). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the transmission method of R2-072205/Arundale/Dimou into that as taught by Nguyen to identify a transmission gap in a downlink transmission from a base station and suspend high speed data packet reception by the user equipment during the reception suspension period (Nguyen, [0012] and [0015]).

12. R2-072205 teaches a method of transmitting system information on a downlink shared channel structured as successive subframes (fig. 5.4.1.2 and fig. x), the method comprising: transmitting system information in regularly occurring time windows (fig. x: SU-1, SU-2 and SU-3 are in a same subframe and are recurring), (fig. x: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); and indicating to receiving user equipment which subframes within a given time window carry system information (sec 7.4 – SB value tag in each SU).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of successive subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
R2-072205, modified by Arundale, may not have explicitly depicted "*dynamically* selecting which subframes within a given time window are to be used for carrying

system information."
Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.
R2-072205/Arundale/Dimou may not have explicitly mentioned said transmission of said system information is "on downlink shared channel" as amended. Nguyen teaches transmitting system information on a downlink shared channel ([0047]: high speed physical downlink shared channel (HS-PDSCH) transmission if a part of the HS-SCCH subframe or a part of its associated HS-PDSCH subframe overlaps with a downlink transmission gap on the associated DPCH). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the transmission method of R2-072205/Arundale/Dimou into that as taught by Nguyen to identify a transmission gap in a downlink transmission from a base station and suspend high speed data packet reception by the user equipment during the reception suspension period (Nguyen, [0012] and [0015]).

Claims 15, 18, 21 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Draft Text Proposal Capturing Agreements on System Information" (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale), and Dimou et al (US 2009/0131057 A1, Dimou) and Love et al (US 2004/0219917 A1, Love), and in further view of Cheng et al (US 7,680,507 B2, Cheng).

15. R2-072205 teaches a method for a mobile station for receiving system information on a downlink shared channel from a network transmitter in a wireless communication network (fig. 5.4.1.2: UE), the method comprising: monitoring for the receipt of system information in recurring time windows used for the transmission of system information (fig. x: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); within each time window, monitoring each subframe for an indication of system information and reading system information from the signal subframe if such information is present (sec 7.4 – SB value tag in each SU); and terminating monitoring at least at the end of the time window (if there are no more subframes to be monitored, it is only reasonable to terminate monitoring).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of successive subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been

obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
R2-072205, modified by Arundale, may not have explicitly depicted "*dynamically* selecting which subframes within a given time window are to be used for carrying system information."
Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.
While R2-072205/Arundale/Dimou mention said system information, they *may not have explicitly* mentioned "presence indication" of said system information.
Love mentions presence indication of system information in subframe ([0071]: one TFCI bit (EU indication bit) out of one of the slots per frame or sub-frame is used to indicate the presence or absence of the EU field while the other bits in each TFCI field of the remaining slots per frame or sub-frame are still used to represent the TFCI). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the presence indication of system information as taught by Love to the downlink shared channel information subframe of R2-072205/Arundale/Dimou for soft handoff.
R2-072205/Arundale/Dimou/Love may not have explicitly mentioned said monitoring receipt of said system information "on a downlink shared channel" as amended.
Cheng teaches function of monitoring receipt of system information on a downlink shared channel (claim 14: receiving, at a mobile station, at least a portion of a downlink shared channel shared by a plurality of mobiles and having a plurality of subframes, each subframe comprising a plurality of slots, each slot including a power control part composed of power control bits for the plurality of mobiles, a data status part and a data part). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the reception method of R2-072205/Arundale/Dimou/Love to the function as taught by Cheng to reduce use of channelization codes (Cheng, col. 1 lines 55-59).

21. R2-072205 teaches a mobile station operative to receive system information on a downlink channel from a network transmitter in a wireless communications network, the mobile station comprising a baseband processor (fig. 5.4.1.2: UE) operable to: monitor for the receipt of system information in recurring time windows used for the transmission of system information (fig. x: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); within each time window, monitor each subframe for an indication of system information and reading system information from the signal subframe if such information is present (fig. x: SIB); and terminate monitoring at least at

the end of the time window (if there are no more subframes to be monitored, it is only reasonable to terminate monitoring).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of successive subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
R2-072205, modified by Arundale, may not have explicitly depicted "*dynamically* selecting which subframes within a given time window are to be used for carrying system information."
Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.
While R2-072205/Arundale/Dimou mention said system information, they *may not have explicitly* mentioned "presence indication" of said system information.
Love mentions presence indication of system information in subframe ([0071]: one TFCI bit (EU indication bit) out of one of the slots per frame or sub-frame is used to indicate the presence or absence of the EU field while the other bits in each TFCI field of the remaining slots per frame or sub-frame are still used to represent the TFCI). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the presence indication of system information as taught by Love to the downlink shared channel information subframe of R2-072205/Arundale/Dimou for soft handoff.
R2-072205/Arundale/Dimou/Love may not have explicitly mentioned said monitoring receipt of said system information "on a downlink shared channel" as amended.
Cheng teaches function of monitoring receipt of system information on a downlink shared channel (claim 14: receiving, at a mobile station, at least a portion of a downlink shared channel shared by a plurality of mobiles and having a plurality of subframes, each subframe comprising a plurality of slots, each slot including a power control part composed of power control bits for the plurality of mobiles, a data status part and a data part). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the reception method of R2-072205/Arundale/Dimou/Love to the function as taught by Cheng to reduce use of channelization codes (Cheng, col. 1 lines 55-59).

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2. R2-072205 teaches the method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a contiguous set of subframes within the given time window (fig. x: subframes 3 and 131).

3. R2-072205 teaches the method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a non-contiguous set of subframes within the given time window (fig. x: subframes 19 and 67).

4. R2-072205 teaches the method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting which subframes to use for transmitting system information in view of competing transmission priorities associated with other control or data signaling (fig. x: SIB).

7. R2-072205 teaches the method of claim 1, further comprising varying window sizes of the recurring time windows (fig. x: SU-1, SU-2 and SU-3 have different sizes).

8. R2-072205 teaches the method of claim 1, further comprising dynamically configuring a window size for the recurring time windows (sec. 7.4 – MIB paragraph).

9. R2-072205 teaches the method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using different indicators corresponding to different types of system information (sec 7.4 – MIB paragraph), such that the indicator used for a particular subframe indicates the type of system information carried in that subframe (sec 7.4 – SIB).

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11. R2-072205 teaches the network transmitter of claim 10, wherein the network transmitter comprises a radio base station configured for operation in accordance with 3GPP E-UTRA standards (3GPP TSG-RAN2).

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18. R2-072205 teaches the method of claim 15, further comprising storing a default window size for monitoring for system information transmissions (fig. x: SU-1, SU-2 and SU-3 have default sizes).

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25. R2-072205 teaches the mobile station of claim 21, wherein the baseband processor is operable to recognize different types of system information based on different system information indicators detected in different subframes (fig. x: SIB-a,b,c,d,e).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over "Draft Text Proposal Capturing Agreements on System Information" (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale), Dimou et al (US 2009/0131057 A1, Dimou) and Nguyen (US 2006/0034245 A1) (hereinafter R2-072205 etc.), applied to claim 1, and in further view of "System Information Scheduling and Change Notification" (R2-071912).

5. R2-072205 etc. teaches the method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information; R2-072205 etc. does not very explicitly show it comprises using an RNTI (Radio Network Temporary Identifier) to denote that the subframe carries system information. R2-071912 explicitly teaches subframes indicators are in RNTI format (page 3 bottom). It would have been obvious to one of ordinary skill in the art when the invention was made to understand that both R2 documents refer to the same 3GPP systems information techniques and the R2-072205 (primary reference), while being silent on its application to the indications, also uses RNTI.

Claims 19, 20, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Draft Text Proposal Capturing Agreements on System Information" (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale), Dimou et al (US 2009/0131057 A1, Dimou), Love et al (US 2004/0219917 A1, Love) and Nguyen (US 2006/0034245 A1) (hereinafter R2-072205); and in further view of Marinier et al (US 2008/0225765 A1, Marinier).

19. R2-072205 etc. teaches the method of claim 18; R2-072205 etc. does not explicitly mention further comprising monitoring for system information transmissions based on a specified window size indicated in received information rather than the default window size. Marinier teaches monitoring for system information transmissions based on a specified window size indicated in received information rather than a default window size ([0457]: if window size is changed for reordering purpose, then it is only reasonable that the changing window sizes are monitored). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 etc. to allow configurable window sizes to facilitate reordering procedure.

20. R2-072205 etc. teaches the method of claim 15; R2-072205 etc. does not explicitly mention further comprising recognizing different types of system information based on recognizing different system information indicators in different signal subframes. Marinier teaches recognizing different types of system information based on recognizing different system information indicators in different signal subframes ([0457]: if window size is changed for reordering purpose, then it is only reasonable that the changing window sizes are recognized). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 etc. to allow configurable window sizes to facilitate reordering procedure.

23. R2-072205 etc. teaches the mobile station of claim 21; R2-072205 etc. may not have explicitly mentioned wherein the baseband processor is operable to adapt to changing or configurable window sizes used for the time window. Marinier teaches changing or configurable window sizes used for the time window ([0457]). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 etc. to allow configurable window sizes to facilitate reordering procedure.

24. R2-072205 etc. teaches the mobile station of claim 21; R2-072205 etc. does not explicitly mention wherein the baseband processor is operable to monitor for system information transmissions based on a specified window size indicated in received information rather than a default window size. Marinier teaches monitoring for system information transmissions based on a specified window size indicated in received information rather than a default window size ([0457]: if window size is changed for reordering purpose, then it is only reasonable that the changing window sizes are monitored). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 etc. to allow configurable window sizes to facilitate reordering procedure.

Claims 6, 13, 16 and 22 are rejected under 35 U.S.C. 103(a) as being

unpatentable over “Draft Text Proposal Capturing Agreements on System Information”

(R2-072205) in view of Arundale et al (US 7675852 B1, Arundale), and in further view of Dimou et al (US 2009/0131057 A1, Dimou) (hereinafter R2-072205 etc.); and in further view of Kashima et al (US 2007/0217362 A1, Kashima).

6. R2-072205 etc. teaches the method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information; R-072205 etc. do not explicitly shows it includes using an end-of-system-information indicator in a last subframe of the given time window that carries system information. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information (0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 etc. to maintain flexibility of scheduling.

13. R2-072205 etc. teaches the method of claim 12; R-072205 etc. does not explicitly shows wherein indicating to receiving user equipment which subframes within a given time window carry system information includes indicating the last subframe within the given time window that carries system information, thereby allowing the receiving user equipment to cease monitoring for system information within the given time window. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information so to cease monitoring within a given time (0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 etc. for flexibility of scheduling subframes.

16. R2-072205 etc. teaches the method of claim 15; R-072205 etc. does not explicitly shows it further comprising recognizing an end-of-system-information indicator in a signal subframe received within the time window and terminating monitoring for the time window in response. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information (0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 to maintain flexibility of scheduling.

22. R2-072205 etc. teaches the mobile station of claim 21; R-072205 etc. does not explicitly shows wherein the baseband processor is operable to recognize an end-of-system-information indicator in a signal subframe received within the time window and terminate monitoring for the time window in response. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information (0069 and 0072). It would have been obvious to one of ordinary skill

in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 etc. to maintain flexibility of scheduling.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, this action is made FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xavier Wong whose telephone number is (571)270-1780. The examiner can normally be reached on Monday through Friday 11:30 am - 9:00 pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Un C. Cho can be reached on 571-272-7919. 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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800.786.9199 (IN USA OR CANADA) or 571.272.1000.

/Xavier Szewai Wong/
Primary Examiner, Art Unit 2462
27th September 2012

Notice of References Cited	Application/Control No. 12/664,347	Applicant(s)/Patent Under Reexamination DAHLMAN ET AL.	
	Examiner Xavier Szewai Wong	Art Unit 2413	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2006/0034245 A1	02-2006	Nguyen, Phong	370/345
*	B	US-7,680,507 B2	03-2010	Cheng et al.	455/522
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

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.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12664347	DAHLMAN ET AL.
	Examiner	Art Unit
	Xavier Szewai Wong	2413

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
EAST image, class and keyword search in USPAT, US-PGPUB, DERWENT, EPO, JPO, and IBM_TDB (please see search history)	2011.12.17	/XSW/
Inventor Name and Assignee search in PALM and EAST	2011.12.17	/XSW/
EAST combined subclass, image and text search:: 370/311,328-334,468 and 455/422.1	2011.12.17	/XSW/
Updated Searches Above	2012.09.30	/XSW/
Updated Searches Above	2013.08.23	/XSW/

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	303877	("370"/$.ccls. "455"/$.ccls.) and (@rlad < "20070618" @ad < "20070618")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/08/26 02:28
L2	24	L1 and (downlink adj shared adj channel) with subframe	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/08/26 02:28
L3	20	L1 and (downlink adj shared adj channel) with subframe with transmi$5	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/08/26 02:37
L4	8	L3 and (receiv$3 reception) with (downlink adj shared adj channel) with subframe	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/08/26 02:59
L5	56975	(Dahlman Vukajlovic).IN. Ericsson.AS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/08/26 03:14
L6	1	L5 and (re$1cur$5 adj2 window).clm. and (downlink adj shared).clm.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/08/26 03:14

EAST Search History (Interference)

<This search history is empty>

8/26/2013 3:15:00 AM
C:\Users\xwong\Desktop\Dahlman\Dahlman 2012.09.30.wsp

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	12664347	Filing Date	2009-12-11	Docket Number (if applicable)	4015-6727 / P24241-US2	Art Unit	2462
First Named Inventor	Dahlman			Examiner Name	Wong		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☒ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☐ Other _____

☒ Enclosed

☒ Amendment/Reply

☐ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☒ Other
Request for Extension of Time

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 181167

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

☐ Applicant Signature

Signature of Registered U.S. Patent Practitioner			
Signature	/John R. Owen Reg. No. 42055/	Date (YYYY-MM-DD)	2013-03-16
Name	John R. Owen	Registration Number	42055

This collection of information is required by 37 CFR 1.114. 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.

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of **Dahlman**	)	
Serial No.: **12/664,347**	)	Examiner: Xavier S. Wong
Filed: **December 11, 2009**	)	Group Art Unit: 2462
For: **Transmission of System Information on a Downlink Shared Channel**	)	Confirmation No.: 1464
Docket No: **4015-6727**	)	

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

16 March 2013

AMENDMENT WITH RCE

This paper is being filed in response to the Final Action mailed 17 October 2012, and the Advisory Action mailed 6 February 2013. A suitable time extension is requested, an RCE, and corresponding fees are being submitted herewith. Reconsideration is respectfully requested in light of the amendments and remarks below. The Office is hereby authorized to charge any fees required for entry of this paper to Deposit Account 18-1167.

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method of transmitting system information on a downlink shared channel of a wireless communication network comprising:

transmitting system information on the downlink shared channel in recurring time windows, each time window spanning a plurality of subframes;

dynamically selecting which subframes within a given time window are to be used for carrying the system information; and

including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

2. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a contiguous set of subframes within the given time window.

3. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a non-contiguous set of subframes within the given time window.

4. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting which subframes to use for transmitting system information in view of competing transmission priorities associated with other control or data signaling.

5. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries

system information comprises using an RNTI (Radio Network Temporary Identifier) to denote that the subframe carries system information.

6. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using an end-of-system-information indicator in a last subframe of the given time window that carries system information.

7. (Original) The method of claim 1, further comprising varying window sizes of the recurring time windows.

8. (Original) The method of claim 1, further comprising dynamically configuring a window size for the recurring time windows.

9. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using different indicators corresponding to different types of system information, such that the indicator used for a particular subframe indicates the type of system information carried in that subframe.

10. (Currently amended) A network transmitter for transmitting system information on a downlink shared channel in a wireless communications network, the network transmitter configured to transmit system information in recurring time windows, each time window spanning a plurality of subframes; the network transmitter comprising a baseband processor configured to:

dynamically select which subframes on the downlink shared channel within a given time window are to be used for carrying system information; and

include an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

11. (Original) The network transmitter of claim 10, wherein the network transmitter comprises a radio base station configured for operation in accordance with 3GPP E-UTRA standards.

12. (Previously presented) A method of transmitting system information on a downlink shared channel structured as successive subframes, the method comprising:

transmitting system information on the downlink shared channel in regularly occurring time windows, each time window spanning a plurality of successive subframes;

dynamically selecting which subframes within a given time window are to be used for carrying system information;

indicating to receiving user equipment which subframes within a given time window carry system information.

13. (Original) The method of claim 12, wherein indicating to receiving user equipment which subframes within a given time window carry system information includes indicating the last subframe within the given time window that carries system information, thereby allowing the receiving user equipment to cease monitoring for system information within the given time window.

14. (Cancelled)

15. (Currently amended) A method, in a mobile station, for receiving system information on a downlink shared channel from a network transmitter in a wireless communication network, the method comprising:

monitoring for the receipt of system information on the downlink shared channel in recurring time windows used for the transmission of system information, each said time window spanning a plurality of subframes;

within each time window, monitoring each subframe for an indication of the presence of system information and reading system information from the subframe if such information is present; and

terminating monitoring at least at the end of the time window.

16. (Previously presented) The method of claim 15, further comprising recognizing an end-of-system-information indicator in a subframe received within the time window and terminating monitoring for the time window in response.

17. (Cancelled)

18. (Original) The method of claim 15, further comprising storing a default window size for monitoring for system information transmissions.

19. (Original) The method of claim 18, further comprising monitoring for system information transmissions based on a specified window size indicated in received information rather than the default window size.

20. (Previously presented) The method of claim 15, further comprising recognizing different types of system information based on recognizing different system information indicators in different subframes.

21. (Currently amended) A mobile station operative to receive system information on a downlink shared channel from a network transmitter in a wireless communications network, the mobile station comprising a baseband processor configured to:

monitor for the receipt of system information on the downlink shared channel in recurring time windows used for the transmission of system information, each said time window spanning a plurality of subframes;

within each time window, monitor each subframe for an indication of the presence of system information and read system information from the subframe if such information is present; and

terminate monitoring at least at the end of the time window.

22. (Previously presented) The mobile station of claim 21, wherein the baseband processor is configured to recognize an end-of-system-information indicator in a subframe received within the time window and terminate monitoring for the time window in response.

23. (Previously presented) The mobile station of claim 21, wherein the baseband processor is configured to adapt to variable window sizes used for the time window.

24. (Previously presented) The mobile station of claim 21, wherein the baseband processor is configured to monitor for system information transmissions based on a specified window size indicated in received information rather than a default window size.

25. (Previously presented) The mobile station of claim 21, wherein the baseband processor is configured to recognize different types of system information based on different system information indicators detected in different subframes.

26. (Previously presented) The method of claim 1 wherein the dynamically selecting comprises dynamically selecting subframes such that the same system information is assigned for transmission to different subframes in first and second consecutive time windows, with the different subframes occupying differing respective positions within their corresponding frames.

REMARKS

The Examiner's attention is directed to the remarks presented in the response filed 25 January 2013, which are incorporated herein but not reprinted herein for brevity.

Claim Amendments

These amendments assume that the amendments submitted 25 January 2013 have been entered, as mandated by the submission of the RCE.

Claim 17 has been canceled.

Claims 1, 10, 15, 21 have been amended to repeat limitations found in the preamble in the "main body" of the claim. Support for these amendments is found throughout the specification and drawings, *see*, *e.g.*, page 6, lines 4-15; original claims. No new matter is added.

Claim Objections

See the remarks presented in the response of January 2013. Note that claim 17 has been canceled.

§112 Rejection

See the remarks presented in the response of January 2013.

§103 Rejections

Claims 1-4, 7-12 stand rejected under §103 as obvious over R2-072205 (herein after "R2") in view of Arundale (US 7675852) and Dimou (US 20090121057). Claims

5-6, 13, 15-25 stand rejected under §103 as being obvious over R2/Arundale/Dimou in combination with various tertiary references. Applicant requests reconsideration.

Claim 1 requires, *inter alia*, "dynamically selecting which subframes within a given time window are to be used for carrying the system information," and "including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information." R2 does not show either feature.

In the Advisory Action, the Examiner sets forth the following interpretation of R2 which the Examiner *expressly relies on* to make the §103 rejections:

1. The Scheduling Units (SU) of R2 are the claimed "time windows."
2. The SB value tag in R2 is the claimed "system information."

As an initial matter, Applicant submits that the R2 SUs are not "time windows", but are instead understood by one of skill in the art to be an amount of system information grouped into System Information Blocks (SIBs). In other words, SUs are understood to be a specific type of data (system information), which are then transmitted. Data is not a time window. Instead, one of skill in the art would understand that a subframe might be considered a time window (generically), or a collection of subframes (e.g., a frame) might be considered a time window, but the data itself is not a time window. Nevertheless, the discussion below will be in the context of the R2 SUs being time windows so that the errors in the Examiner's analysis can be discussed in terms that the Examiner used to make the rejections. Regardless of the correctness of the Examiner's terminology, R2 does not make the showings relied on to make the §103 rejections.

First, assuming *arguendo* that an SU is a "time window", R2 does not show "transmitting system information in recurring time windows, each time window spanning a plurality of subframes." SU-1 is plainly shown in Fig. x as being only one subframe. Thus, SU-1 simply cannot be the claimed "time window" as it does not "span[] a plurality of subframes," as required by claim 1. In contrast, both SU-2 and SU-3 are shown as being multiple subframes in size. However, the SB value tag is not in SU-2 or SU-3. There is no indication anywhere in R2 that the SB is located anywhere other than in SU-1. Thus, the only SU that has the SB (i.e., SU-1) cannot be the claimed time window because it never spans multiple subframes and the SUs that span multiple subframes (SU-2 and SU-3) never contain the putative "system information." Thus, despite the Examiner's assertions to the contrary, R2 does not show "transmitting system information in recurring time windows, each time window spanning a plurality of subframes," as claimed in claim 1.

Applicant notes that the Examiner points to the statement in R2 that "an SU may be segmented, in which case segments are scheduled in subsequent consecutive subframes." However, one of skill in the art understands that such statement only applies to SU-2 and SU-3, as these are the only multi-subframe SU's. There is no suggestion anywhere in R2 that SU-1 is multi-subframe. Further, the SB (and hence, the putative "system information" according to the Examiner) is only located in SU-1 according to R2 ("the scheduling information within SU-1 is contained in a System Information Block called the Scheduling Block (SB)." The SB is not present in either SU-2 or SU-3. Thus, the putative "system information" in R2 is transmitted only in a single subframe SU (SU-1), and is not repeated for any other subframe. Accordingly,

R2 does not teach "transmitting system information in recurring time windows, each time window spanning a plurality of subframes" under this interpretation.

Applicant also notes that the Examiner points to Arundale to show that "time windows" can span multiple subframes. The reliance on Arundale is baffling. R2 already shows that some putative "time windows" (SUs) can span multiple subframes, see SU-2 and SU-3. Thus, the concept of multiple subframe SUs is already present in R2. However, the R2 approach is fundamentally based on the notion that SU-1 will be only one subframe, and that this subframe will be in a known, non-varying location. Thus, the attempted combination of R2 and Arundale suffers from at least two defects: 1) the proffered reason of "to determine the sizes and number of frames" is a specious argument, as the R2 SU-1 necessarily has a fixed size and a fixed location (in the directly after the subframe carrying the BCH, with a fixed periodicity of 80 ms, see R2 §7.4); and 2) changing R2 so that SU-1 spans multiple subframes would alter the fundamental workings of R2 and render is unusable for its intended purpose. Thus, Arundale cannot properly cure this defect in R2.

Second, assuming *arguendo* that an SU is a "time window", R2 does not show -- despite the Examiner's express assertion to the contrary -- "dynamically selecting which subframes within a given time window are to be used for carrying the system information," as claimed in claim 1. SU-1 is plainly shown in Fig. x as being only one subframe. Thus, as noted above, SU-1 simply cannot be the claimed "time window" as it does not "span[] a plurality of subframes," as required by claim 1. Further, while both SU-2 and SU-3 are shown as being multiple subframes in size, neither uses any sort of "dynamic[] selecting [of] which subframes within a given time window are to be used for

carrying the system information." Instead, the putative "system information" -- the SB according to the Examiner -- is only carried in SU-1, and is never carried in SU-2 or SU-3. Further still, even if one assumes all the non-SB System Information Blocks (SIB) as containing "system information" (contrary to the Examiner's stated position), R2 still does not show any dynamic selection. Instead, R2 plainly shows that all of SU-2 and all of SU-3 contain non-SB "system information." Thus, all of the subframes of SU-2 and SU-3 contain this non-SB "system information," so there can be no dynamic selection of which subframes carry the "system information" - quite simply because they all carry it. As such, R2 simply does not show the claimed dynamic selection.

Applicant notes that the Examiner expressly states that R2 shows the claimed dynamic selection, but then states "R2 … *may not have explicitly* mentioned 'dynamically selecting which subframes within a given time window are to be used for carrying the system information,' " and then points to Dimou. In view of this vague language, Applicant requests pursuant to MPEP §760.07 that the Examiner either explicitly state that he is contending that R2 makes this showing, or explicitly admit that R2 does not make this showing and stop repeating language to the contrary in future explanations.

In order to advance prosecution, Applicant will also explain below why Dimou does not cure this lack of "dynamically selecting which subframes … system information" defect of R2 (alone or in combination with Arundale).

The Examiner points to the passage in Dimou ¶[0039] reading in part "this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users" (emphasis added). Read in

the Dimou context, it is clear that this portion of Dimou is discussing dynamically allocating uplink resources -- from the mobile terminals to the base stations. Such allocation of uplink resources is unrelated to allocation of downlink resources, particularly downlink resources broadcast at all relevant mobile terminals on a shared downlink channel, as claimed. As such, whatever Dimou may teach about uplink resource allocation is irrelevant to the claimed method of transmitting system information on a downlink shared channel, and does not cure the dynamic selection defect of R2 noted above. In the only portion of the Advisory Action that addresses this argument, the Examiner states *in toto* " 'dynamically selecting subframes' - is a function to be implemented, in complementary to R2, by Dimou." With respect, this explanation is incomprehensible. What does "in complementary to" mean? To the extent understood, the rebuttal states that the Dimou dynamic selecting of subframes would be a function in Dimou. Assuming that to be true, what difference does it make what Dimou is doing, when the claims are rejected over R2 in combination with Arundale? The proffered rebuttal provides no explanation of how or why such Dimou function would be grafted into a combination of R2 and Arundale. The later text of "to allow system throughput being maximized or users not using the same resource blocks" is not helpful. The system throughput maximization effect of Dimou is due to the use of the Dimou "allocation" on the uplink, and is not conceptually related to increasing system throughput on the downlink. Further, the concept of "users not using the same resource blocks" is likewise unavailing because the point of the R2 SUs is that the various users would use the same resource blocks on the downlink (the blocks with the SUs), not

different resource blocks. As such, a *prima facie* case of obviousness has not been established.

Independent claim 1 also requires "including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information." The putative "indicator" is the "value tag" discussed in R2. However, R2 specifically states in Section 7.4 line 5-14 that Value tags are carried on the BCH, "in a System Information Block called the Master Information Block (MIB)." Thus, these value tags are carried in the MIB, which Fig. x plainly shows is NOT part of SU-1, SU-2, or SU-3. Even setting this aside, and assuming that the MIB is somehow in the SB, R2 teaches that the SB is only present in SU-1, and SU-1 is only one sub-frame. Thus, there are simply not multiple subframes of the same "time window" in R2 that carry indicators. And, even if one assumes all the non-SB System Information Blocks (SIB) are part of the "system information" (contrary to the Examiner's stated position), R2 still does not teach the claimed indicator process, because the SB is present only in SU-1, and is expressly not present in SU-2 or SU-3. Thus, even if the R2 "value tag" is an indicator, R2 does not teach the claimed indicating portion of the method.

In the Advisory Action regarding claim 15, the Examiner points to Love (US 20040219917) for a potentially related teaching on "presence indication." However, Applicant notes that the EU field discussed in Love is directed to a single mobile station, and is not sent on downlink shared channel. As such, whatever Love may teach about indications dedicated to a single mobile station situation is irrelevant to the method of claim 1, and does not cure the corresponding defect of R2-072205 noted above. And, one of skill in the art would not use Love in combination with R2/Arundale/Dimou.

Important: Note that the argument in the following paragraph assumes that the "system information" necessarily includes the SB and the non-SB SIB information because if only the SB information is the "system information," the §103 rejections necessarily fail for other reasons outlined above (e.g., not multiple sub-frames, etc.).

R2 explicitly teaches that the SB is always broadcast in SU-1, and that SU-1 is always the "subframe following the one carrying BCH," (see R2 §7.4). Further, R2 teaches that "SU-1 is carried on the DL-SCH and uses a fixed schedule with a periodicity of 80 ms." From this it follows that there is no need for a value tag to indicate that a subframe contains SU-1, as SU-1 is always placed in the subframe directly following the subframe carrying the BCH, with a periodicity of 80 ms. At most, the SB value tag is indicating information about the *other* SUs, but not SU-1 itself. And, there would simply be no reason to indicate the presence of the "system information" in SU-1, because SU-1 always carries the SB and is always in a fixed time location (every 80ms). One of skill in the art would not add an indication of presence, when the "presence" is guaranteed to always be there. Thus, adding the "presence indication" of Love to R2/Arundale/Dimou would not make sense. And, without having the indication in every relevant subframe in the time window that carries the claimed system information, the combination would not read on the claimed device.

Applicant would like to emphasize this last point, which goes at a fundamental difference between the claimed approach and R2. R2 is fundamentally built on the idea that the system information will always be in a non-varying predicable subframe -- one directly after the BCH that, starts every 80ms, and continues contiguously as appropriate. Claim 1, in contrast, claims a method where the system information is

dynamically placed in potentially varying subframes, which may or may not be contiguous. Thus, attempts to graft other teachings onto R2 in order to reach the subject matter of claim 1 must necessarily fundamentally alter the way R2 works, which is legally impressible to support a §103 rejection.

None of the other cited art appears relevant to the issues discussed above, and therefore are not believed to cure any of the defects noted above.

As pointed out above, R2-072205 fails to teach at least two limitations of claim 1. As such, independent claim 1 defines over the proffered combination of R2-072205/Arundale/Dimou, assuming *arguendo* that such combination is proper. Further, none of the other cited art (cited against the various dependent claims) cures these defects. Accordingly, independent claim 1 and its dependent claims define over the cited art.

For claims 10-11, Applicant notes that independent claim 10 includes limitations identical or similar to the "dynamically selecting" and "including an indicator in each selected subframe" limitations found in claim 1. Accordingly, Applicant submits that independent claim 10 and its dependent claims define over the cited art for reasons similar to those discussed above with respect to independent claim 1.

For claims 12-13, Applicant notes that independent claim 12 includes "dynamically selecting" limitations identical or similar to those found in claim 1. Accordingly, Applicant submits that independent claim 12, and its dependent claims

define over the cited art for reasons similar to those discussed above with respect to independent claim 1.

For claims 15-20, 21-25 Applicant notes that independent claim 15 requires "monitoring each subframe for an indication of the presence of system information and reading system information from the subframe if such information is present" while independent claim 21 likewise requires "monitor each subframe for an indication of the presence of system information and read system information from the subframe if such information is present." The claimed monitoring of each subframe in these claims is related to the "including an indicator in each selected subframe" limitation found in claim 1. As pointed out above, R2 does not show the "value tags" in each relevant subframe, but at most only in the SB. Nor does R2 suggest looking for "value tags" anywhere but in the SB. Therefore, R2 necessarily does not teach "monitoring" each subframe for the "value tags." Further, the "value tag" of R2 is not "an indication of the presence of system information." Thus, R2 cannot teach "monitor[ing] each subframe for an indication of the presence of system information and read[ing] system information from the subframe if such information is present," as claimed. And, as discussed above, the attempted reliance on Love is misplaced. As such, Applicant submits that independent claims 15 and 21, and their corresponding dependent claims, define over the cited art for reasons similar to those discussed above with respect to independent claim 1.

Dependent Claim 26

Applicant notes that dependent claim 26 is rejected solely on §112 grounds, and that no §102/§103 rejections are presented for this claim. The §112 rejection of claim 26 is addressed above. As such, Applicant submits that the §112 rejection is overcome and dependent claim 26 is directed to patentable subject matter as indicated in the Action.

Request for Clarification of the Record

In the Advisory Action, the Examiner continues to explicitly maintain that "SU-1, SU-2 and SU-3 are in the same subframe and are recurring," and bases the §103 rejections on this premise. For a discussion of how R2 makes it abundantly clear that SU-1, SU-2, and SU-3 are NOT in the same subframe, see the explanation provided in the Response of January 2013. Applicant notes that the Examiner, other than repeating verbatim that R2 makes this showing, has not rebutted the substance of Applicant's arguments on this point. Pursuant to MPEP§706.07, Applicant request that the Examiner clearly state the Examiner's position on this characterization of R2, and provide an analysis identifying any errors in Applicant's argument on this point. Because this "same subframe" assertion by the Examiner regarding R2 clearly forms a basis for one or more claim rejections, Applicant is entitled to an explanation of the Examiner's position on this point in view of Applicant's contrary explanation.

For the forgoing reasons, it is respectfully urged that the present application is in condition for allowance and notice to such effect is respectfully requested.

Respectfully submitted,
COATS & BENNETT, P.L.L.C.

/John R. Owen Reg. No. 42055/
Dated: 16 March 2013
John R. Owen
Registration No.: 42,055
Telephone: (919) 854-1844

PTO/SB/22 (10-12)
Approved for use through 1/31/2013. OMB 0651-0031
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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)

Docket Number (Optional): 4015-6727/P24241-US2

Application Number: 12664347

Filed: 2009-12-11

For: Transmission of System Information on a Downlink Shared Channel

Art Unit: 2462

Examiner: Wong

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

	Fee	Small Entity Fee	
☐ One month (37 CFR 1.17(a)(1))	$150	$75	$
☒ Two months (37 CFR 1.17(a)(2))	$570	$285	$ 570
☐ Three months (37 CFR 1.17(a)(3))	$1,290	$645	$
☐ Four months (37 CFR 1.17(a)(4))	$2,010	$1,005	$
☐ Five months (37 CFR 1.17(a)(5))	$2,730	$1,365	$

☐ Applicant claims small entity status. See 37 CFR 1.27.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 181167.

☐ Payment made via EFS-Web.

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.

I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest. See 37 CFR 3.71. 37 CFR 3.73(b) statement is enclosed (Form PTO/SB/96).

☒ attorney or agent of record. Registration number 42055.

☐ attorney or agent acting under 37 CFR 1.34. Registration number .

/John R. Owen Reg. No. 42055/ — Signature

16 March 2013 — Date

John R. Owen — Typed or printed name

919-854-1844 — Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☒ * Total of 1 forms are submitted.

Electronic Patent Application Fee Transmittal

Application Number:	12664347
Filing Date:	11-Dec-2009
Title of Invention:	Transmission of System Information on a Downlink Shared Channel
First Named Inventor/Applicant Name:	Erik Dahlman
Filer:	John R. Owen/Cora Fedornock
Attorney Docket Number:	4015-6727 / P24241-US2

Filed as Large Entity

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 2 months with $0 paid	1252	1	570	570

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**570**

Electronic Acknowledgement Receipt	
EFS ID:	15275882
Application Number:	12664347
International Application Number:	
Confirmation Number:	1464
Title of Invention:	Transmission of System Information on a Downlink Shared Channel
First Named Inventor/Applicant Name:	Erik Dahlman
Customer Number:	24112
Filer:	John R. Owen/Cora Fedornock
Filer Authorized By:	John R. Owen
Attorney Docket Number:	4015-6727 / P24241-US2
Receipt Date:	16-MAR-2013
Filing Date:	11-DEC-2009
Time Stamp:	13:49:52
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Electronic Funds Transfer
Payment was successfully received in RAM	$570
RAM confirmation Number	32333
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Request for Continued Examination (RCE)	40156727RCE.pdf	33707 e388ee68d71bd53ec37fd15b3da3606008892298	no	2
Warnings:					
This is not a USPTO supplied RCE SB30 form.					
Information:					
2		40156727RESPONSE.pdf	109769 3c948dda439137f751faef99fdb478f4550feae6	yes	19
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Amendment Submitted/Entered with Filing of CPA/RCE		1	1	
	Claims		2	7	
	Applicant Arguments/Remarks Made in an Amendment		8	19	
Warnings:					
Information:					
3	Extension of Time	40156727EOT.pdf	28683 a97f3395263ff260e96dfb5321ac2cb56518fe2e	no	1
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	30006 8165af28348ffbb15f8def015a83ccf3119432d6	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	202165		

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Patent Application Fee Transmittal	
Application Number:	12664347
Filing Date:	11-Dec-2009
Title of Invention:	Transmission of System Information on a Downlink Shared Channel
First Named Inventor/Applicant Name:	Erik Dahlman
Filer:	John R. Owen
Attorney Docket Number:	4015-6727 / P24241-US2
Filed as Large Entity	

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Request for Continued Examination	1801	1	930	930
		Total in USD ($)		**930**

Electronic Acknowledgement Receipt

EFS ID:	15276072
Application Number:	12664347
International Application Number:	
Confirmation Number:	1464
Title of Invention:	Transmission of System Information on a Downlink Shared Channel
First Named Inventor/Applicant Name:	Erik Dahlman
Customer Number:	24112
Filer:	John R. Owen
Filer Authorized By:	
Attorney Docket Number:	4015-6727 / P24241-US2
Receipt Date:	16-MAR-2013
Filing Date:	11-DEC-2009
Time Stamp:	16:45:06
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Electronic Funds Transfer
Payment was successfully received in RAM	$930
RAM confirmation Number	32576
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Fee Worksheet (SB06)	fee-info.pdf	30204 68df5234260a9676a2a711d53ec2bb820efc9d85	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	30204	

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
12/664,347	12/11/2009	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☐ RATE ($)	SMALL ENTITY ☐ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	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).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	03/16/2013	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 24	Minus	** 25	= 0	X $ =		OR	X $62=	0
	Independent (37 CFR 1.16(h))	* 5	Minus	***5	= 0	X $ =		OR	X $250=	0
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L 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.

Legal Instrument Examiner:
/GAIL WOOTEN/

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/664,347	12/11/2009	Erik Dahlman	4015-6727 / P24241-US2	1464

24112 7590 02/06/2013

COATS & BENNETT, PLLC
1400 Crescent Green, Suite 300
Cary, NC 27518

EXAMINER	
WONG, XAVIER S	
ART UNIT	PAPER NUMBER
2413	

MAIL DATE	DELIVERY MODE
02/06/2013	PAPER

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

The time period for reply, if any, is set in the attached communication.

Remarks

Applicant's representative mentions the examiner's objection to "**adapted to**" (in claim 17) makes no sense and asserts that "**adapted to**" is a positive assertion.

In contrast, claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed, or by claim language that does not limit a claim to a particular structure. However, examples of claim language, **although *not* exhaustive**, that may raise a question as to the **limiting effect of the language in a claim** are:

(A) " **adapted to** " or "adapted for " clauses;
(B) " wherein " clauses; and
(C) " whereby " clauses.

The determination of whether each of these clauses is a limitation in a claim depends on the specific facts of the case. In Hoffer v. Microsoft Corp., 405 F.3d 1326, 1329, 74 USPQ2d 1481, 1483 (Fed. Cir. 2005), the court held that when a "whereby' clause states a condition that is material to patentability, it cannot be ignored in order to change the substance of the invention." Id. However, the court noted (quoting Minton v. Nat 'l Ass 'n of Securities Dealers, Inc., 336 F.3d 1373, 1381, 67 USPQ2d 1614, 1620 (Fed. Cir. 2003)) that a "whereby clause in a method claim is not given weight when it simply expresses the intended result of a process step positively recited.'" Id.

See also **MPEP § 2111.04**.

In response to applicant's argument that the references fail to show certain features of applicant's invention and the examiner did not rebut (or misinterpret) to the remarks in the previous response, it is noted that the features upon which applicant relies are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. The arguments mentioned in the previous remarks by the applicant read the specification into the actual claim limitations. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The examiner's rebuttal is based on broadest reasonable interpretation as seen in the claim language.

Applicant maintains that R2-077205, in combination with Arundale and Dimou, does not represent:

"recurring time windows" – as mentioned in section 7.4 of R2-077205, the SUs (scheduling units) in fig. x are considered so-called "time windows" because they represent "scheduling information" and "*periodicity*" in the DL-SCH (downlink schedule);

further down in fig. x, "multi-frame/scheduling period" portion, shows *repetitive* darkened portions of the SUs mentioned above in certain periods, thus, it is considered "recurring time windows";

"system information in subframes" – the examiner considers the SB value tag in each SU the so-called "system information in subframes" is because in section 7.4 top portion of R2-077205 mentions "system information" carried in the subframes comprises of, among other things, physical layer parameters, system frame number (SFN) and, *value tags*; not to mention, SIB represents "system information block" as shown in fig. x;

"indicator in each of selected subframes" – R2-077205 section 7.4 quotes "An SU may be segmented in which case segments are scheduled in subsequent consecutive subframes. In this case, PDCCH is used for each segment... SU-1 is scheduled in the subframe following the one carrying... It is FFS if the eNB may schedule more than one SU in a subframe" which describes itself; even if it is FFS (for future study), the concept and idea are presented and it should be considered due diligence;

"each time window spanning a plurality of subframes" – Arundale is introduced to explicitly show, in figures 3 and 4, plural subframes (fig. 3: subframes; fig. 4: subframe

435, 415) in a (each) time window (fig. 3: windows 310, 320, 330 and 340; fig. 4: windows 420, 425 and 430) among plural time windows; and,

"dynamically selecting subframes" – is a *function* to be implemented, in complementary to R2-077205, by Dimou.

In light of the above explanations, the rejection is maintained as follows:

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1 – 4 and 7 – 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Draft Text Proposal Capturing Agreements on System Information" (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale), and in further view of Dimou et al (US 2009/0131057 A1, Dimou).

1. R2-072205 teaches a method of transmitting system information on the downlink shared channel of a wireless communication network (sec 7.4 downlink system) comprising: transmitting system information in recurring time windows (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); dynamically selecting which subframes within a given time window are to be used for carrying the system information (sec 7.4 – An SU may be segmented, in which case segments are scheduled… eNB may schedule more than one SU in a subframe); and including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information (sec 7.4 – SB value tag in each SU).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
R2-072205, modified by Arundale, *may not have explicitly* mentioned "*dynamically* select which subframes within a given time window are to be used for carrying system information.

Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]:: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.

10. R2-072205 teaches a network transmitter for transmitting system information on a downlink shared channel in a wireless communications network, the network transmitter configured to comprising a baseband processor (fig. 5.4.1.2) generate system information in recurring time windows (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are recurring), the network transmitter comprising a baseband processor configured to: include an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information (sec 7.4 – SB value tag in each SU).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
R2-072205, modified by Arundale, *may not have explicitly* mentioned "*dynamically* select which subframes within a given time window are to be used for carrying system information.
Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]:: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.

12. R2-072205 teaches a method of transmitting system information on a downlink shared channel structured as successive subframes (fig. 5.4.1.2 and fig. x), the method comprising: transmitting system information in regularly occurring time windows (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are recurring), (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); and indicating to receiving user equipment which subframes within a given time window carry system information (sec 7.4 – SB value tag in each SU).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of

successive subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
R2-072205, modified by Arundale, may not have explicitly depicted "*dynamically* selecting which subframes within a given time window are to be used for carrying system information."
Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]:: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.

Claims 15, 18, 21 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Draft Text Proposal Capturing Agreements on System Information" (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale), and in further view of Dimou et al (US 2009/0131057 A1, Dimou) and Love et al (US 2004/0219917 A1, Love).

15. R2-072205 teaches a method for a mobile station for receiving system information on a downlink shared channel from a network transmitter in a wireless communication network (fig. 5.4.1.2:: UE), the method comprising: monitoring for the receipt of system information in recurring time windows used for the transmission of system information (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); within each time window, monitoring each subframe for an indication of system information and reading system information from the signal subframe if such information is present (sec 7.4 – SB value tag in each SU); and terminating monitoring at least at the end of the time window (if there are no more subframes to be monitored, it is only reasonable to terminate monitoring).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of successive subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink

shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
R2-072205, modified by Arundale, may not have explicitly depicted "*dynamically* selecting which subframes within a given time window are to be used for carrying system information."
Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]:: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.
While R2-072205/Arundale/Dimou mention said system information, they *may not have explicitly* mentioned "presence indication" of said system information.
Love mentions presence indication of system information in subframe ([0071]:: one TFCI bit (EU indication bit) out of one of the slots per frame or sub-frame is used to indicate the presence or absence of the EU field while the other bits in each TFCI field of the remaining slots per frame or sub-frame are still used to represent the TFCI). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the presence indication of system information as taught by Love to the downlink shared channel information subframe of R2-072205/Arundale/Dimou for soft handoff.

21. R2-072205 teaches a mobile station operative to receive system information on a downlink channel from a network transmitter in a wireless communications network, the mobile station comprising a baseband processor (fig. 5.4.1.2:: UE) operable to: monitor for the receipt of system information in recurring time windows used for the transmission of system information (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); within each time window, monitor each subframe for an indication of system information and reading system information from the signal subframe if such information is present (fig. x:: SIB); and terminate monitoring at least at the end of the time window (if there are no more subframes to be monitored, it is only reasonable to terminate monitoring).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of successive subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
R2-072205, modified by Arundale, may not have explicitly depicted "*dynamically* selecting which subframes within a given time window are to be used for carrying system information."

Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]:: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.
While R2-072205/Arundale/Dimou mention said system information, they *may not have explicitly* mentioned "presence indication" of said system information.
Love mentions presence indication of system information in subframe ([0071]:: one TFCI bit (EU indication bit) out of one of the slots per frame or sub-frame is used to indicate the presence or absence of the EU field while the other bits in each TFCI field of the remaining slots per frame or sub-frame are still used to represent the TFCI). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the presence indication of system information as taught by Love to the downlink shared channel information subframe of R2-072205/Arundale/Dimou for soft handoff.

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2. R2-072205 teaches the method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a contiguous set of subframes within the given time window (fig. x:: subframes 3 and 131).

3. R2-072205 teaches the method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a non-contiguous set of subframes within the given time window (fig. x:: subframes 19 and 67).

4. R2-072205 teaches the method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting which subframes to use for transmitting system information in view of competing transmission priorities associated with other control or data signaling (fig. x:: SIB).

7. R2-072205 teaches the method of claim 1, further comprising varying window sizes of the recurring time windows (fig. x:: SU-1, SU-2 and SU-3 have different sizes).

8. R2-072205 teaches the method of claim 1, further comprising dynamically configuring a window size for the recurring time windows (sec. 7.4 – MIB paragraph).

9. R2-072205 teaches the method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using different indicators corresponding to different types of system information (sec 7.4 – MIB paragraph), such that the indicator used for a particular subframe indicates the type of system information carried in that subframe (sec 7.4 – SIB).

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11. R2-072205 teaches the network transmitter of claim 10, wherein the network transmitter comprises a radio base station configured for operation in accordance with 3GPP E-UTRA standards (3GPP TSG-RAN2).

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18. R2-072205 teaches the method of claim 15, further comprising storing a default window size for monitoring for system information transmissions (fig. x:: SU-1, SU-2 and SU-3 have default sizes).

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25. R2-072205 teaches the mobile station of claim 21, wherein the baseband processor is operable to recognize different types of system information based on different system information indicators detected in different subframes (fig. x:: SIB-a,b,c,d,e).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over “Draft Text Proposal Capturing Agreements on System Information” (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale), Dimou et al (US 2009/0131057 A1, Dimou) (hereinafter R2-072205 etc.), applied to claim 1, and in further view of “System Information Scheduling and Change Notification” (R2-071912).

5. R2-072205 etc. teaches the method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information; R2-072205 etc. does not very explicitly show it comprises using an RNTI (Radio Network Temporary Identifier) to denote that the subframe carries system information. R2-071912 explicitly teaches subframes indicators are in RNTI

format (page 3 bottom). It would have been obvious to one of ordinary skill in the art when the invention was made to understand that both R2 documents refer to the same 3GPP systems information techniques and the R2-072205 (primary reference), while being silent on its application to the indications, also uses RNTI.

Claims 17, 19, 20, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over “Draft Text Proposal Capturing Agreements on System Information” (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale), Dimou et al (US 2009/0131057 A1, Dimou) and Love et al (US 2004/0219917 A1, Love) (hereinafter R2-072205); and in further view of Marinier et al (US 2008/0225765 A1, Marinier).

17. R2-072205 etc. teaches the method of claim 15; R2-072205 etc. may not have explicitly mentioned further comprising adapting to changing or configurable window sizes used for the time window. Marinier teaches changing or configurable window sizes used for the time window ([0457]). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 etc. to allow configurable window sizes to facilitate reordering procedure.

19. R2-072205 etc. teaches the method of claim 18; R2-072205 etc. does not explicitly mention further comprising monitoring for system information transmissions based on a specified window size indicated in received information rather than the default window size. Marinier teaches monitoring for system information transmissions based on a specified window size indicated in received information rather than a default window size ([0457]:: if window size is changed for reordering purpose, then it is only reasonable that the changing window sizes are monitored). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 etc. to allow configurable window sizes to facilitate reordering procedure.

20. R2-072205 etc. teaches the method of claim 15; R2-072205 etc. does not explicitly mention further comprising recognizing different types of system information based on recognizing different system information indicators in different signal subframes. Marinier teaches recognizing different types of system information based on recognizing different system information indicators in different signal subframes ([0457]:: if window size is changed for reordering purpose, then it is only reasonable that the changing window sizes are recognized). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 etc. to allow configurable window sizes to facilitate reordering procedure.

23. R2-072205 etc. teaches the mobile station of claim 21; R2-072205 etc. may not have explicitly mentioned wherein the baseband processor is operable to adapt to changing or configurable window sizes used for the time window. Marinier teaches changing or configurable window sizes used for the time window ([0457]). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 etc. to allow configurable window sizes to facilitate reordering procedure.

24. R2-072205 etc. teaches the mobile station of claim 21; R2-072205 etc. does not explicitly mention wherein the baseband processor is operable to monitor for system information transmissions based on a specified window size indicated in received information rather than a default window size. Marinier teaches monitoring for system information transmissions based on a specified window size indicated in received information rather than a default window size ([0457]:: if window size is changed for reordering purpose, then it is only reasonable that the changing window sizes are monitored). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 etc. to allow configurable window sizes to facilitate reordering procedure.

Claims 6, 13, 16 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over “Draft Text Proposal Capturing Agreements on System Information” (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale), and in further view of Dimou et al (US 2009/0131057 A1, Dimou) (hereinafter R2-072205 etc.); and in further view of Kashima et al (US 2007/0217362 A1, Kashima).

6. R2-072205 etc. teaches the method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information; R-072205 etc. do not explicitly shows it includes using an end-of-system-information indicator in a last subframe of the given time window that carries system information. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information (0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 etc. to maintain flexibility of scheduling.

13. R2-072205 etc. teaches the method of claim 12; R-072205 etc. does not explicitly shows wherein indicating to receiving user equipment which subframes within a given

time window carry system information includes indicating the last subframe within the given time window that carries system information, thereby allowing the receiving user equipment to cease monitoring for system information within the given time window. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information so to cease monitoring within a given time (0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 etc. for flexibility of scheduling subframes.

16. R2-072205 etc. teaches the method of claim 15; R-072205 etc. does not explicitly shows it further comprising recognizing an end-of-system-information indicator in a signal subframe received within the time window and terminating monitoring for the time window in response. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information (0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 to maintain flexibility of scheduling.

22. R2-072205 etc. teaches the mobile station of claim 21; R-072205 etc. does not explicitly shows wherein the baseband processor is operable to recognize an end-of-system-information indicator in a signal subframe received within the time window and terminate monitoring for the time window in response. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information (0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 etc. to maintain flexibility of scheduling.

Conclusion

Applicant filed after-final response on 25th January 2013 and made amendments in claims 21 and 26 which consist of scope change.

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xavier S. Wong whose telephone number is 571.270.1780. The examiner can normally be reached on Monday through Friday 11:30 am - 9:00 pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Un C. Cho can be reached on 571.272.7917. 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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800.786.9199 (IN USA OR CANADA) or 571.272.1000.

/Xavier Szewai Wong/
Primary Examiner, Art Unit 2413
4th February 2013

Advisory Action Before the Filing of an Appeal Brief	**Application No.** 12/664,347	**Applicant(s)** DAHLMAN ET AL.
	Examiner Xavier Szewai Wong	**Art Unit** 2413

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

THE REPLY FILED 25th January 2013 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☒ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:
   a) ☒ The period for reply expires *3* months from the mailing date of the final rejection.
   b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
   c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection. The current period for reply expires months from the mailing date of *the prior Advisory Action* or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.

   Examiner Note: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANT'S FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☒ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   a) ☒ They raise new issues that would require further consideration and/or search (see NOTE below);
   b) ☐ They raise the issue of new matter (see NOTE below);
   c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☒ For purposes of appeal, the proposed amendment(s): (a) ☒ will not be entered, or (b) ☐ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☐ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: _____.
12. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____
13. ☒ Other: see remarks and conclusion.

STATUS OF CLAIMS

14. The status of the claim(s) is (or will be) as follows:
    Claim(s) allowed: .
    Claim(s) objected to: .
    Claim(s) rejected: 1-26.
    Claim(s) withdrawn from consideration: .

DON'T ENTER
2013.02.01
/XSW/

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of **Dahlman**	
Serial No.: **12/664,347**	Examiner: Xavier S. Wong
Filed: **December 11, 2009**	Group Art Unit: 2462
For: **Transmission of System Information on a Downlink Shared Channel**	Confirmation No.: 1464
Docket No: **4015-6727**	

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

25 January 2013

RESPONSE TO FINAL ACTION

This paper is being filed in response to the Final Action mailed 17 October 2012. A suitable time extension is requested. Reconsideration is respectfully requested in light of the amendments and remarks below. The Office is hereby authorized to charge any fees required for entry of this paper to Deposit Account 18-1167.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of **Dahlman**	)	
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25 January 2013

RESPONSE TO FINAL ACTION

This paper is being filed in response to the Final Action mailed 17 October 2012. A suitable time extension is requested. Reconsideration is respectfully requested in light of the amendments and remarks below. The Office is hereby authorized to charge any fees required for entry of this paper to Deposit Account 18-1167.

AMENDMENTS TO THE CLAIMS

1. (Previously presented) A method of transmitting system information on a downlink shared channel of a wireless communication network comprising:

transmitting system information in recurring time windows, each time window spanning a plurality of subframes;

dynamically selecting which subframes within a given time window are to be used for carrying the system information; and

including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

2. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a contiguous set of subframes within the given time window.

3. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a non-contiguous set of subframes within the given time window.

4. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting which subframes to use for transmitting system information in view of competing transmission priorities associated with other control or data signaling.

5. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries

system information comprises using an RNTI (Radio Network Temporary Identifier) to denote that the subframe carries system information.

6. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using an end-of-system-information indicator in a last subframe of the given time window that carries system information.

7. (Original) The method of claim 1, further comprising varying window sizes of the recurring time windows.

8. (Original) The method of claim 1, further comprising dynamically configuring a window size for the recurring time windows.

9. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using different indicators corresponding to different types of system information, such that the indicator used for a particular subframe indicates the type of system information carried in that subframe.

10. (Previously presented) A network transmitter for transmitting system information on a downlink shared channel in a wireless communications network, the network transmitter configured to transmit system information in recurring time windows, each time window spanning a plurality of subframes; the network transmitter comprising a baseband processor configured to:

dynamically select which subframes within a given time window are to be used for carrying system information; and

include an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

11. (Original) The network transmitter of claim 10, wherein the network transmitter comprises a radio base station configured for operation in accordance with 3GPP E-UTRA standards.

12. (Previously presented) A method of transmitting system information on a downlink shared channel structured as successive subframes, the method comprising:

transmitting system information in regularly occurring time windows, each time window spanning a plurality of successive subframes;

dynamically selecting which subframes within a given time window are to be used for carrying system information;

indicating to receiving user equipment which subframes within a given time window carry system information.

13. (Original) The method of claim 12, wherein indicating to receiving user equipment which subframes within a given time window carry system information includes indicating the last subframe within the given time window that carries system information, thereby allowing the receiving user equipment to cease monitoring for system information within the given time window.

14. (Cancelled)

15. (Previously presented) A method, in a mobile station, for receiving system information on a downlink shared channel from a network transmitter in a wireless communication network, the method comprising:

monitoring for the receipt of system information in recurring time windows used for the transmission of system information, each said time window spanning a plurality of subframes;

within each time window, monitoring each subframe for an indication of the presence of system information and reading system information from the subframe if such information is present; and

terminating monitoring at least at the end of the time window.

16. (Previously presented) The method of claim 15, further comprising recognizing an end-of-system-information indicator in a subframe received within the time window and terminating monitoring for the time window in response.

17. (Previously presented) The method of claim 15, further comprising adapting to variable window sizes used for the time window.

18. (Original) The method of claim 15, further comprising storing a default window size for monitoring for system information transmissions.

19. (Original) The method of claim 18, further comprising monitoring for system information transmissions based on a specified window size indicated in received information rather than the default window size.

20. (Previously presented) The method of claim 15, further comprising recognizing different types of system information based on recognizing different system information indicators in different subframes.

21. (Currently amended) A mobile station operative to receive system information on a downlink shared channel from a network transmitter in a wireless communications network, the mobile station comprising a baseband processor ~~operable~~ configured to:

monitor for the receipt of system information in recurring time windows used for the transmission of system information, each said time window spanning a plurality of subframes;

within each time window, monitor each subframe for an indication of the presence of system information and read system information from the subframe if such information is present; and

terminate monitoring at least at the end of the time window.

22. (Currently amended) The mobile station of claim 21, wherein the baseband processor is ~~operable~~ configured to recognize an end-of-system-information indicator in

a subframe received within the time window and terminate monitoring for the time window in response.

23. (Previously presented) The mobile station of claim 21, wherein the baseband processor is configured to adapt to variable window sizes used for the time window.

24. (Currently amended) The mobile station of claim 21, wherein the baseband processor is ~~operable~~ configured to monitor for system information transmissions based on a specified window size indicated in received information rather than a default window size.

25. (Currently amended) The mobile station of claim 21, wherein the baseband processor is ~~operable~~ configured to recognize different types of system information based on different system information indicators detected in different subframes.

26. (Currently amended) The method of claim 1 wherein the dynamically selecting comprises dynamically selecting subframes such that the same system information is assigned for transmission to different ~~non-aligned~~ subframes in first and second consecutive time windows, with the different subframes occupying differing respective positions within their corresponding frames.

REMARKS

Claim Amendments

Claims 21-22, 24-26 have been amended.

Support for these amendments is found throughout the specification and drawings, *see*, *e.g.*, pages 4-7 and accompanying drawings. These amendments do not introduce new matter herein.

These amendments are submitted per the Examiner's suggestion and/or to correct typographical errors, and act to narrow the issues for Appeal. As such, entry of the amendments is requested.

Claim Objections

The Action includes instructions to "delete all occurrences of 'adapting,' 'adapted to,' and 'operable to'…. into -- configured to --" for claims 21, 22, 24, 25. Applicant has amended claims 21, 22, 24, 25 on this point, without changing their respective scopes on this point.

With regard to claim 17, Applicant is confused by the Examiner's position. Applicant notes that the Examiner has failed to further explain or cite any legal authority for the position that the verb "adapting" "lacks positive assertion" in a method claim (versus in an apparatus claim). Applicant submits that "adapting to" is a positive assertion in a method claim. Further, the Examiner's suggestion to change the language to "configured to" simply makes no sense in the context of claim 17. Accordingly, Applicant requests withdrawal of the objection to claim 17.

§112 Rejection

The Action states that claim 26 is rejected for an alleged indefiniteness violation of §112,¶2 for use "different non-aligned subframes." However, the Action fails to explain how such language is allegedly indefinite. Nevertheless, and solely to narrow the issues for appeal, Applicant amends claim 26 to alternatively state the non-aligned nature with the language "with the different subframes occupying differing respective positions within their corresponding frames." This amendment is supported throughout the specification and drawings, *see*, *e.g.*, pages 4-5 of the specification (corresponding to ¶¶[0023]-[0026] of the published U.S. application). Withdrawal of the corresponding §112 rejection is requested.

§103 Rejections

Claims 1-4, 7-12 stand rejected under §103 as obvious over R2-072205 in view of Arundale (US 7675852) and Dimou (US 20090121057). Claims 5-6, 13, 15-25 stand rejected under §103 as being obvious over R2-072205/Arundale/Dimou in combination with various tertiary references. Applicant requests reconsideration.

Claim 1 requires, *inter alia*, "dynamically selecting which subframes within a given time window are to be used for carrying the system information," and "including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information." R2-072205 does not show either feature.

As an initial matter, Applicant directs the Examiner's attention to MPEP §706.07 which states in part, "Before final rejection is in order a clear issue should be developed

between the examiner and applicant… The examiner should never lose sight of the fact that …a clear issue between applicant and examiner should be developed, if possible, before appeal." In this regard, Applicant notes that Applicant presented several arguments in the last response, which the Examiner has completely failed to rebut. Indeed, the Examiner has not even attempted to rebut most of the arguments.

For example, Applicant previously explained that "fig. x" of R2-072205 plainly shows that SU-1, SU-2, and SU-3 are not in the same subframe. Despite this, the Examiner still asserts fig x shows "SU-1, SU-2 and SU-3 are in a same subframe and are recurring." However, the Examiner provides absolutely no explanation in the present Action of how R2-072205 does this in the face of the Applicant's explanation to the contrary. Instead, the Examiner merely repeats exactly the same language without any further explanation at all. Thus, Applicant's position on this point stands unrebutted. Further, Applicant notes that claim 1 requires "transmitting system information in recurring time windows, each time window spanning a plurality of subframes." Thus, claim 1 requires that the time windows be recurring, and that the time window span multiple subframes, not that the subframes are recurring and that the subframes span a number of time windows, as seemingly suggested by the Examiner. Further still, the SU's of R2-072205 are neither the claimed recurring time windows nor the claimed subframes. Thus, the Examiner 's statement on this point is both wrong and appears to be irrelevant.

As another example, Applicant previously explained how the Examiner was plainly misconstruing the teachings of R2-072205 on the "value tags", and therefore wrongly asserting that R2-072205 teaches the claimed method of "including an indicator

in each of the selected subframes." Again, the Examiner provides absolutely no explanation in the present Action of how R2-072205 teaches the alleged indicators in the face of the Applicant's explanation to the contrary. Instead, again, the Examiner merely repeats exactly the same language without any further explanation at all. Thus, again, Applicant's position on this point stands unrebutted.

As yet another example, Applicant previously explained the R2-072205 value tag simply does not "indicate to receiving user equipment that the subframe carries system information." Again, the Examiner provides absolutely no explanation in the present Action of how R2-072205 teachings on the "value tag" might make the required indication in the face of the Applicant's explanation to the contrary. Instead, again, the Examiner merely repeats exactly the same language without any further explanation at all. Thus, again, Applicant's position on this point stands unrebutted.

In view of the above, Applicant submits the Examiner has avoided developing several issues, and that the finality of the Action should therefore be withdrawn. In particular, the Examiner's rejection relies on at least three plainly erroneous points regarding R2-072205, all of which have been pointed out to the Examiner previously, and none of which has the Examiner even attempted to rebut. And, none of the other cited art appears to cure these defects in R2-072205. As such, Applicant submits that all of the §103 rejections relying on R2-072205 are fatally flawed. Further, Applicant submits that the finality of the present action must be withdrawn as improper under MPEP §706.07.

Applicant notes that the Examiner misinterprets R2-072205 when the Examiner interprets fig. x of R2-072205 to show "SU-1, SU-2 and SU-3 are in a same subframe and are recurring." An examination of fig. x finds that SU-1, SU-2, and SU-3 are plainly not in the same subframe. The size of the subframe is shown by the double-headed arrow. Further, the different SU's (SU-1, SU-2, SU-3) are indicated by different colors and are plainly shown as non-overlapping in both the upper and lower portions of fig. x. Thus, the SU-1, SU-2, and SU-3 in R2-072205 are quite clearly not in the same subframe, as posited by the Examiner.

The "subframe" misinterpretation of R2-072205 leads the Examiner to misinterpret R2-072205 to show dynamic selection of subframes for a given piece of system information. R2-072205 does not show this. Instead, in R2-072205, the subframes to be used for transmitting the system information in a given SU are exactly determined by the periodicity and the amount of system information. This means that once the system information blocks (SIBs) have been mapped onto SUs to be scheduled for transmission the selection of subframes is fixed. There simply is no dynamic selection whatsoever of which subframes within a given time window the system information is to be transmitted in.

Further, the Examiner misconstrues the teachings of R2-072205 on the "value tags", and therefore wrongly asserts that R2-072205 teaches the claimed method of "including an indicator in each of the selected subframes." Assuming *arguendo* that the R2-072205 "value tags" are otherwise analogous to the claimed indicators, the value tags are simply not "in each of the selected subframes." R2-072205 makes clear in Section 7.4 is that "It is FFS [for future study] whether the SB [scheduling block]

includes a value tag for each SU." This means that the value tag for an SU is located in the SB [scheduling block], not in the SU itself. For clarity, R2-072205 specifically states in Section 7.4 line 5-14 that Value tags are carried on the BCH, "in a System Information Block called the Master Information Block (MIB)." Thus, these value tags are carried in the MIB, which fig. x plainly shows is NOT part of SU-1, SU-2, or SU-3. Therefore, R2-072205 at most teaches that the "value tags" are carried in a different subframe than the subframes of the "SU" to which they pertain. As such, it is clear that R2-072205 simply does not contemplate "including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information."

Further still, claim 1 requires that the "indicator" -- besides being present in each of the selected subframes -- must "indicate to receiving user equipment that the subframe carries system information." There simply is no evidence that the "value tag" described by R2-072205 serves such a purpose. At most, R2-072205 states the following with regard to the "value tag":

> "It is FFS [for future study] whether the SB [scheduling block] includes a value tag for each SU, whether a common value tag is used. The common value tag could either be carried in the MIB or in the SB."

(R2-072205, p. 5). This passage nowhere suggests that the "value tag" serves any function to "indicate to receiving user equipment that the subframe carries system information," as claimed. Indeed, the function of the "value tag" is not defined in R2-072205, so the Examiner's postulation about its purpose is nothing but conjecture. There simply is no suggestion that the presence or absence of the "value tag" can or

should be interpreted by the receiving user equipment that the subframe having the "value tag" carries system information. As such, the R2-072205 "value tag" is neither present where required nor indicative "to receiving user equipment that the subframe carries system information," as required by claim 1.

Applicant notes that the Examiner also points to Dimou for teachings regarding dynamic selection. The Examiner points to the passage in Dimou ¶[0039] reading in part "this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users" (emphasis added). Read in the Dimou context, it is clear that this portion of Dimou is discussing dynamically allocating uplink resources -- from the mobile terminals to the base stations. Such allocation of uplink resources is unrelated to allocation of downlink resources, particularly downlink resources broadcast at all relevant mobile terminals on a shared downlink channel, as claimed. As such, whatever Dimou may teach about uplink resource allocation is irrelevant to the claimed method of transmitting system information on a downlink shared channel, and does not cure the dynamic allocation defect of R2-072205 noted above.

Applicant notes that the Examiner, in rejecting other claims, points to Love for teachings related to an indication system. Applicant notes that the EU field discussed in Love is directed to a single mobile station, and is not sent on downlink shared channel. As such, whatever Love may teach about indications dedicated to a single mobile station situation is irrelevant to the claimed method, and does not cure the corresponding defect of R2-072205 noted above.

None of the other cited art appears relevant to the issues discussed above, and therefore are not believed to cure any of the defects noted above.

As pointed out above, R2-072205 fails to teach at least two limitations of claim 1. As such, independent claim 1 defines over the proffered combination of R2-072205/Arundale/Dimou, assuming *arguendo* that such combination is proper. Further, none of the other cited art (cited against the various dependent claims) cures these defects. Accordingly, independent claim 1 and its dependent claims define over the cited art.

For claims 10-11, Applicant notes that independent claim 10 includes limitations identical or similar to the "dynamically selecting" and "including an indicator in each selected subframe" limitations found in claim 1. Accordingly, Applicant submits that independent claim 10 and its dependent claims define over the cited art for reasons similar to those discussed above with respect to independent claim 1.

For claims 12-13, Applicant notes that independent claim 12 includes "dynamically selecting" limitations identical or similar to those found in claim 1. Accordingly, Applicant submits that independent claim 12, and its dependent claims define over the cited art for reasons similar to those discussed above with respect to independent claim 1.

For claims 15-20, 21-25 Applicant notes that independent claim 15 requires "monitoring <u>each subframe</u> for an indication of the presence of system information and

reading system information from the subframe if such information is present" while independent claim 21 likewise requires "monitor each subframe for an indication of the presence of system information and read system information from the subframe if such information is present." The claimed monitoring of each subframe in these claims is related to the "including an indicator in each selected subframe" limitation found in claim 1. As pointed out above, R2-072205 does not show the "value tags" in each relevant subframe, but at most only in the SB. Nor does R2-072205 suggest looking for "value tags" anywhere but in the SB. Therefore, R2-072205 necessarily does not teach "monitoring" each subframe for the "value tags." Further, as pointed out above the "value tag" of R2-072205 is not "an indication of the presence of system information." Thus, R2-072205 cannot teach "monitor[ing] each subframe for an indication of the presence of system information and read[ing] system information from the subframe if such information is present," as claimed. And, as discussed above, the attempted reliance on Love is misplaced. Applicant notes that the EU field discussed in Love is directed to a single mobile station, and is not sent on downlink shared channel. As such, whatever Love may teach about indications in a dedicated to a single mobile station situation is irrelevant to the method claimed in independent claims 15 and 21, and does not cure the corresponding defect of R2-072205 noted above. As such, Applicant submits that independent claims 15 and 21, and their corresponding dependent claims, define over the cited art for reasons similar to those discussed above with respect to independent claim 1.

Dependent Claim 26

Applicant notes that dependent claim 26 is rejected solely on §112 grounds, and that no §102/§103 rejections are presented for this claim. The §112 rejection of claim 26 is addressed above. As such, Applicant submits that the §112 rejection is overcome and dependent claim 26 is directed to patentable subject matter as indicated in the Action.

For the forgoing reasons, it is respectfully urged that the present application is in condition for allowance and notice to such effect is respectfully requested.

Respectfully submitted,
COATS & BENNETT, P.L.L.C.

/John R. Owen Reg. No. 42055/
Dated: 25 January 2013
John R. Owen
Registration No.: 42,055
Telephone: (919) 854-1844

PTO/SB/22 (10-12)
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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)

Docket Number (Optional): 4015-6727 / P24241-US2

Application Number: 12/664,347

Filed: 2009-12-11

For: Transmission of System Information on a Downlink Shared Channel

Art Unit: 2462

Examiner: Xavier S. Wong

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

	Fee	Small Entity Fee	
■ One month (37 CFR 1.17(a)(1))	$150	$75	$ 150.00
☐ Two months (37 CFR 1.17(a)(2))	$570	$285	$
☐ Three months (37 CFR 1.17(a)(3))	$1,290	$645	$
☐ Four months (37 CFR 1.17(a)(4))	$2,010	$1,005	$
☐ Five months (37 CFR 1.17(a)(5))	$2,730	$1,365	$

☐ Applicant claims small entity status. See 37 CFR 1.27.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

■ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 18-1167.

■ Payment made via EFS-Web.

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.

I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest. See 37 CFR 3.71. 37 CFR 3.73(b) statement is enclosed (Form PTO/SB/96).

■ attorney or agent of record. Registration number 42,055.

☐ attorney or agent acting under 37 CFR 1.34. Registration number .

/John R. Owen Reg. No. 42055/ — Signature

January 25, 2013 — Date

John R. Owen — Typed or printed name

919-854-1844 — Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

■ * Total of 1 forms are submitted.

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The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	12664347
Filing Date:	11-Dec-2009
Title of Invention:	Transmission of System Information on a Downlink Shared Channel
First Named Inventor/Applicant Name:	Erik Dahlman
Filer:	John R. Owen/Donna Donovan
Attorney Docket Number:	4015-6727 / P24241-US2

Filed as Large Entity

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 1 month with $0 paid	1251	1	150	150

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**150**

Electronic Acknowledgement Receipt

EFS ID:	14792538
Application Number:	12664347
International Application Number:	
Confirmation Number:	1464
Title of Invention:	Transmission of System Information on a Downlink Shared Channel
First Named Inventor/Applicant Name:	Erik Dahlman
Customer Number:	24112
Filer:	John R. Owen/Donna Donovan
Filer Authorized By:	John R. Owen
Attorney Docket Number:	4015-6727 / P24241-US2
Receipt Date:	25-JAN-2013
Filing Date:	11-DEC-2009
Time Stamp:	13:38:36
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Electronic Funds Transfer
Payment was successfully received in RAM	$150
RAM confirmation Number	11773
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1		Response_to_FOA.pdf	71519 be2425f165c7bee5ee861fc16b353b677ba935f7	yes	17

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment After Final	1	1
	Claims	2	7
	Applicant Arguments/Remarks Made in an Amendment	8	17

Warnings:

Information:

2	Extension of Time	Petition_for_Extenstion_of_Time.pdf	83587 d32435cb61d8b513992082c1b29a7ae1be11f569	no	2

Warnings:

Information:

3	Fee Worksheet (SB06)	fee-info.pdf	30066 d51c16fd662e0d1522c6b8c92feb4149e0477b25	no	2

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Total Files Size (in bytes):	185172

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
12/664,347	12/11/2009	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☐ RATE ($)	SMALL ENTITY ☐ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	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).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	01/25/2013	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 25	Minus	** 25	= 0	X $ =		OR	X $62=	0
	Independent (37 CFR 1.16(h))	* 5	Minus	***5	= 0	X $ =		OR	X $250=	0
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L 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.

Legal Instrument Examiner:
/PARTHENIA D. MERRILL/

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/664,347	12/11/2009	Erik Dahlman	4015-6727 / P24241-US2	1464

24112 7590 10/17/2012

COATS & BENNETT, PLLC
1400 Crescent Green, Suite 300
Cary, NC 27518

EXAMINER	
WONG, XAVIER S	
ART UNIT	PAPER NUMBER
2413	

MAIL DATE	DELIVERY MODE
10/17/2012	PAPER

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

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	12/664,347	DAHLMAN ET AL.	
	Examiner	Art Unit	
	Xavier Szewai Wong	2462	

-- 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) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, 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 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 *11th June 2012*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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

5)☒ Claim(s) *1-13 and 15-26* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-13 and 15-26* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ 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).

12)☐ 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

13)☐ 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)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

Claim Objections

In claims **17**, **21**, **22**, **24** and **25**, delete all occurrences of "adapt to," "adapting," "adapted to," "oper*able* to" and "operat*ive* to" because these terms lack positive assertion, e.g. change them into -- configured to --.

Appropriate corrections are required.

Claim Rejections - 35 USC § 112

Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 26 mentions – "different *non-aligned* subframes" *in first and second consecutive time windows*.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1 – 4 and 7 – 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Draft Text Proposal Capturing Agreements on System Information" (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale), and in further view of Dimou et al (US 2009/0131057 A1, Dimou).

1. R2-072205 teaches a method of transmitting system information on the downlink shared channel of a wireless communication network (sec 7.4 downlink system) comprising: transmitting system information in recurring time windows (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); dynamically selecting which

subframes within a given time window are to be used for carrying the system information (sec 7.4 – An SU may be segmented, in which case segments are scheduled… eNB may schedule more than one SU in a subframe); and including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information (sec 7.4 – SB value tag in each SU).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
Dimou

10. R2-072205 teaches a network transmitter for transmitting system information on a downlink shared channel in a wireless communications network, the network transmitter configured to comprising a baseband processor (fig. 5.4.1.2) generate system information in recurring time windows (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are recurring), the network transmitter comprising a baseband processor configured to: include an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information (sec 7.4 – SB value tag in each SU).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
R2-072205, modified by Arundale, *may not have explicitly* mentioned "*dynamically* select which subframes within a given time window are to be used for carrying system information.
Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]:: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.

12. R2-072205 teaches a method of transmitting system information on a downlink shared channel structured as successive subframes (fig. 5.4.1.2 and fig. x), the method comprising: transmitting system information in regularly occurring time windows (fig. x::

SU-1, SU-2 and SU-3 are in a same subframe and are recurring), (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); and indicating to receiving user equipment which subframes within a given time window carry system information (sec 7.4 – SB value tag in each SU).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of successive subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
R2-072205, modified by Arundale, may not have explicitly depicted "*dynamically* selecting which subframes within a given time window are to be used for carrying system information."
Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]:: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.

Claims 15, 18, 21 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Draft Text Proposal Capturing Agreements on System Information" (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale), and in further view of Dimou et al (US 2009/0131057 A1, Dimou) and Love et al (US 2004/0219917 A1, Love).

15. R2-072205 teaches a method for a mobile station for receiving system information on a downlink shared channel from a network transmitter in a wireless communication network (fig. 5.4.1.2:: UE), the method comprising: monitoring for the receipt of system information in recurring time windows used for the transmission of system information (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); within each time window, monitoring each subframe for an indication of system information and reading system information from the signal subframe if such information is present (sec 7.4 – SB value tag in each SU); and terminating monitoring at least at the end of the time window (if there are no more subframes to be monitored, it is only reasonable to terminate monitoring).

R2-072205 *may not have explicitly* shown "each time window spanning a plurality of successive subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
R2-072205, modified by Arundale, may not have explicitly depicted "*dynamically* selecting which subframes within a given time window are to be used for carrying system information."
Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]:: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.
While R2-072205/Arundale/Dimou mention said system information, they *may not have explicitly* mentioned "presence indication" of said system information.
Love mentions presence indication of system information in subframe ([0071]:: one TFCI bit (EU indication bit) out of one of the slots per frame or sub-frame is used to indicate the presence or absence of the EU field while the other bits in each TFCI field of the remaining slots per frame or sub-frame are still used to represent the TFCI). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the presence indication of system information as taught by Love to the downlink shared channel information subframe of R2-072205/Arundale/Dimou for soft handoff.

21. R2-072205 teaches a mobile station operative to receive system information on a downlink channel from a network transmitter in a wireless communications network, the mobile station comprising a baseband processor (fig. 5.4.1.2:: UE) operable to: monitor for the receipt of system information in recurring time windows used for the transmission of system information (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); within each time window, monitor each subframe for an indication of system information and reading system information from the signal subframe if such information is present (fig. x:: SIB); and terminate monitoring at least at the end of the time window (if there are no more subframes to be monitored, it is only reasonable to terminate monitoring).
R2-072205 *may not have explicitly* shown "each time window spanning a plurality of successive subframes." Arundale shows each time window spanning a plurality of subframes (fig. 3 subframes 315 in window 320; col. 8 lines 58-61). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the window to accommodate a plurality of subframes as taught by Arundale in the downlink

shared channel transmitting method in R2-072205 to determine the sizes and number of frames to include in each window.
R2-072205, modified by Arundale, may not have explicitly depicted "*dynamically* selecting which subframes within a given time window are to be used for carrying system information."
Dimou teaches *dynamically* select which subframes within a given time window are to be used for carrying system information ([0039]:: this resource block allocation is valid for a time window and Node Bs can allocate resources dynamically (e.g. even at a sub-frame level) to their users). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the dynamic selection of subframe as taught by Dimou to the downlink shared channel transmitting method in R2-072205/Arundale to allow system throughput being maximized or users not using the same resource blocks.
While R2-072205/Arundale/Dimou mention said system information, they *may not have explicitly* mentioned "presence indication" of said system information.
Love mentions presence indication of system information in subframe ([0071]:: one TFCI bit (EU indication bit) out of one of the slots per frame or sub-frame is used to indicate the presence or absence of the EU field while the other bits in each TFCI field of the remaining slots per frame or sub-frame are still used to represent the TFCI). It would have been obvious to one of ordinary skill in the art when the invention was made to implement the presence indication of system information as taught by Love to the downlink shared channel information subframe of R2-072205/Arundale/Dimou for soft handoff.

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2. R2-072205 teaches the method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a contiguous set of subframes within the given time window (fig. x:: subframes 3 and 131).

3. R2-072205 teaches the method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a non-contiguous set of subframes within the given time window (fig. x:: subframes 19 and 67).

4. R2-072205 teaches the method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting which subframes to use for transmitting system information in view of competing transmission priorities associated with other control or data signaling (fig. x:: SIB).

7. R2-072205 teaches the method of claim 1, further comprising varying window sizes of the recurring time windows (fig. x:: SU-1, SU-2 and SU-3 have different sizes).

8. R2-072205 teaches the method of claim 1, further comprising dynamically configuring a window size for the recurring time windows (sec. 7.4 – MIB paragraph).

9. R2-072205 teaches the method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using different indicators corresponding to different types of system information (sec 7.4 – MIB paragraph), such that the indicator used for a particular subframe indicates the type of system information carried in that subframe (sec 7.4 – SIB).

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11. R2-072205 teaches the network transmitter of claim 10, wherein the network transmitter comprises a radio base station configured for operation in accordance with 3GPP E-UTRA standards (3GPP TSG-RAN2).

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18. R2-072205 teaches the method of claim 15, further comprising storing a default window size for monitoring for system information transmissions (fig. x:: SU-1, SU-2 and SU-3 have default sizes).

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25. R2-072205 teaches the mobile station of claim 21, wherein the baseband processor is operable to recognize different types of system information based on different system information indicators detected in different subframes (fig. x:: SIB-a,b,c,d,e).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over “Draft Text Proposal Capturing Agreements on System Information” (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale), Dimou et al (US 2009/0131057 A1, Dimou) (hereinafter R2-072205 etc.), applied to claim 1, and in further view of “System Information Scheduling and Change Notification” (R2-071912).

5. R2-072205 etc. teaches the method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe

carries system information; R2-072205 etc. does not very explicitly show it comprises using an RNTI (Radio Network Temporary Identifier) to denote that the subframe carries system information. R2-071912 explicitly teaches subframes indicators are in RNTI format (page 3 bottom). It would have been obvious to one of ordinary skill in the art when the invention was made to understand that both R2 documents refer to the same 3GPP systems information techniques and the R2-072205 (primary reference), while being silent on its application to the indications, also uses RNTI.

Claims 17, 19, 20, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over “Draft Text Proposal Capturing Agreements on System Information” (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale), Dimou et al (US 2009/0131057 A1, Dimou) and Love et al (US 2004/0219917 A1, Love) (hereinafter R2-072205); and in further view of Marinier et al (US 2008/0225765 A1, Marinier).

17. R2-072205 etc. teaches the method of claim 15; R2-072205 etc. may not have explicitly mentioned further comprising adapting to changing or configurable window sizes used for the time window. Marinier teaches changing or configurable window sizes used for the time window ([0457]). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 etc. to allow configurable window sizes to facilitate reordering procedure.

19. R2-072205 etc. teaches the method of claim 18; R2-072205 etc. does not explicitly mention further comprising monitoring for system information transmissions based on a specified window size indicated in received information rather than the default window size. Marinier teaches monitoring for system information transmissions based on a specified window size indicated in received information rather than a default window size ([0457]:: if window size is changed for reordering purpose, then it is only reasonable that the changing window sizes are monitored). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 etc. to allow configurable window sizes to facilitate reordering procedure.

20. R2-072205 etc. teaches the method of claim 15; R2-072205 etc. does not explicitly mention further comprising recognizing different types of system information based on recognizing different system information indicators in different signal subframes. Marinier teaches recognizing different types of system information based on recognizing different system information indicators in different signal subframes ([0457]:: if window size is changed for reordering purpose, then it is only reasonable that the changing

window sizes are recognized). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 etc. to allow configurable window sizes to facilitate reordering procedure.

23. R2-072205 etc. teaches the mobile station of claim 21; R2-072205 etc. may not have explicitly mentioned wherein the baseband processor is operable to adapt to changing or configurable window sizes used for the time window. Marinier teaches changing or configurable window sizes used for the time window ([0457]). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 etc. to allow configurable window sizes to facilitate reordering procedure.

24. R2-072205 etc. teaches the mobile station of claim 21; R2-072205 etc. does not explicitly mention wherein the baseband processor is operable to monitor for system information transmissions based on a specified window size indicated in received information rather than a default window size. Marinier teaches monitoring for system information transmissions based on a specified window size indicated in received information rather than a default window size ([0457]:: if window size is changed for reordering purpose, then it is only reasonable that the changing window sizes are monitored). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 etc. to allow configurable window sizes to facilitate reordering procedure.

Claims 6, 13, 16 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over “Draft Text Proposal Capturing Agreements on System Information” (R2-072205) in view of Arundale et al (US 7675852 B1, Arundale), and in further view of Dimou et al (US 2009/0131057 A1, Dimou) (hereinafter R2-072205 etc.); and in further view of Kashima et al (US 2007/0217362 A1, Kashima).

6. R2-072205 etc. teaches the method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information; R-072205 etc. do not explicitly shows it includes using an end-of-system-information indicator in a last subframe of the given time window that carries system information. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information (0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention

was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 etc. to maintain flexibility of scheduling.

13. R2-072205 etc. teaches the method of claim 12; R-072205 etc. does not explicitly shows wherein indicating to receiving user equipment which subframes within a given time window carry system information includes indicating the last subframe within the given time window that carries system information, thereby allowing the receiving user equipment to cease monitoring for system information within the given time window. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information so to cease monitoring within a given time (0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 etc. for flexibility of scheduling subframes.

16. R2-072205 etc. teaches the method of claim 15; R-072205 etc. does not explicitly shows it further comprising recognizing an end-of-system-information indicator in a signal subframe received within the time window and terminating monitoring for the time window in response. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information (0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 to maintain flexibility of scheduling.

22. R2-072205 etc. teaches the mobile station of claim 21; R-072205 etc. does not explicitly shows wherein the baseband processor is operable to recognize an end-of-system-information indicator in a signal subframe received within the time window and terminate monitoring for the time window in response. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information (0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 etc. to maintain flexibility of scheduling.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, this action is made FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xavier Wong whose telephone number is 571.270.1780. The examiner can normally be reached on Monday through Friday 11:30 am - 9:00 pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yemane Mesfin can be reached on 571.272.3927. 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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800.786.9199 (IN USA OR CANADA) or 571.272.1000.

/Xavier Szewai Wong/
Primary Examiner, Art Unit 2462
27th September 2012

Notice of References Cited	Application/Control No. 12/664,347	Applicant(s)/Patent Under Reexamination DAHLMAN ET AL.	
	Examiner Xavier Szewai Wong	Art Unit 2462	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2004/0219917 A1	11-2004	Love et al.	455/436
*	B	US-7,675,852 B1	03-2010	Arundale et al.	370/229
*	C	US-2009/0131057 A1	05-2009	Dimou, Konstantinos	455/436
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

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.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L10	0	12/664347 and non adj align$5	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/10/01 00:03
L11	1	12/664347	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/10/01 00:03
L12	0	12/664347 and align$5	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/10/01 00:03

EAST Search History (Interference)

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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12664347	DAHLMAN ET AL.
	Examiner	Art Unit
	Xavier Szewai Wong	2462

SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
EAST image, class and keyword search in USPAT, US-PGPUB, DERWENT, EPO, JPO, and IBM_TDB (please see search history)	2011.12.17	/XSW/
Inventor Name and Assignee search in PALM and EAST	2011.12.17	/XSW/
EAST combined subclass, image and text search:: 370/311,328-334,468 and 455/422.1	2011.12.17	/XSW/
Updated Searches Above	2012.09.30	/XSW/

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	283415	("370"/$.ccls. "455"/$.ccls.) and (@rlad < "20070618" @ad < "20070618")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/09/30 21:29
L2	4	L1 AND plurality WITH window WITH sub$1frame	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/09/30 21:29
L3	4	L1 AND within WITH window WITH sub$1frame	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/09/30 21:50
L4	14	L1 AND one WITH window WITH sub$1frame	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/09/30 21:55
L5	2	L1 AND dynamic$5 with select$5 with sub$1frame	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/09/30 22:04
L6	38	L1 AND dynamic$5 near3 (choos$4 pick$3 select$5) with (window sub$1frame)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/09/30 22:10
L7	1	L1 AND dynamic$5 with (window with sub$1frame)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/09/30 22:57
L8	35	L1 AND sub$1frame with (present presence) with indicat$5	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/09/30 23:16
L9	2	L1 AND sub$1frame with (present presence) with indicat$5 with system	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/09/30 23:19

EAST Search History (Interference)

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L10	0	L1 AND sub$1frame with non$1align$5	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/10/01 00:11

EAST Search History (Interference)

< This search history is empty>

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of **Dahlman**	)	
Serial No.: **12/664,347**	)	Examiner: Xavier S. Wong
Filed: **December 11, 2009**	)	Group Art Unit: 2462
For: **Transmission of System Information on a Downlink Shared Channel**	)	Confirmation No.: 1464
Docket No: **4015-6727**	)	

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

CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]

I hereby certify that this correspondence is being:

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11 June 2012 — Date

Cora L. Fedornock

This correspondence is being:

☒ electronically submitted via EFS-Web

RESPONSE TO OFFICE ACTION

This paper is being filed in response to the Office Action mailed December 20, 2011. A **three-month time extension** is requested, and the corresponding fee is submitted herewith. Reconsideration is respectfully requested in light of the amendments and remarks below. The Office is hereby authorized to charge any additional fees required for entry of this paper to Deposit Account 18-1167.

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method of transmitting system information on [[the]] a downlink shared channel of a wireless communication network comprising:

transmitting system information in recurring time windows, each time window spanning a plurality of subframes; ~~overlaid on a sequence of transmit channel subframes;~~

dynamically selecting which subframes within a given time window are to be used for carrying the system information; and

including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

2. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a contiguous set of subframes within the given time window.

3. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a non-contiguous set of subframes within the given time window.

4. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting which subframes to use for transmitting system information in view of competing transmission priorities associated with other control or data signaling.

5. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information comprises using an RNTI (Radio Network Temporary Identifier) to denote that the subframe carries system information.

6. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using an end-of-system-information indicator in a last subframe of the given time window that carries system information.

7. (Original) The method of claim 1, further comprising varying window sizes of the recurring time windows.

8. (Original) The method of claim 1, further comprising dynamically configuring a window size for the recurring time windows.

9. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using different indicators corresponding to different types of system information, such that the indicator used for a particular subframe indicates the type of system information carried in that subframe.

10. (Currently amended) A network transmitter for transmitting system information on a downlink shared channel in a wireless communications network, the network transmitter configured to ~~comprising a baseband processor configured to: generate~~ transmit system information in recurring time windows, each time window spanning a plurality of subframes; ~~overlaid on a sequence of transmit channel subframes;~~ the network transmitter comprising a baseband processor configured to:

dynamically select which subframes within a given time window are to be used for carrying system information; and

include an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

11. (Original) The network transmitter of claim 10, wherein the network transmitter comprises a radio base station configured for operation in accordance with 3GPP E-UTRA standards.

12. (Currently amended) A method of transmitting system information on a downlink shared channel structured as successive subframes, the method comprising:

transmitting system information in regularly occurring time windows, each time window spanning ~~some number~~ a plurality of successive subframes; ~~and~~

dynamically selecting which subframes within a given time window are to be used for carrying system information;

indicating to receiving user equipment which subframes within a given time window carry system information.

13. (Original) The method of claim 12, wherein indicating to receiving user equipment which subframes within a given time window carry system information includes indicating the last subframe within the given time window that carries system information, thereby allowing the receiving user equipment to cease monitoring for system information within the given time window.

14. (Cancelled)

15. (Currently amended) A method, in [[for]] a mobile station, for receiving ~~to receive~~ system information on a downlink shared channel from a network transmitter in a ~~from a supporting~~ wireless communication network, the method comprising:

~~beginning~~ monitoring for the receipt of system information ~~at the start of each time window in a succession of~~ in recurring time windows used for the transmission of system information, each said time window spanning a ~~number of signal~~ plurality of subframes;

within each time window, monitoring each ~~signal~~ subframe for an indication of the presence of system information and reading system information from the ~~signal~~ subframe if such information is present; and

terminating monitoring at least at the end of the time window.

16. (Currently amended) The method of claim 15, further comprising recognizing an end-of-system-information indicator in a ~~signal~~ subframe received within the time window and terminating monitoring for the time window in response.

17. (Currently amended) The method of claim 15, further comprising adapting to variable ~~changing or configurable~~ window sizes used for the time window.

18. (Original) The method of claim 15, further comprising storing a default window size for monitoring for system information transmissions.

19. (Original) The method of claim 18, further comprising monitoring for system information transmissions based on a specified window size indicated in received information rather than the default window size.

20. (Currently amended) The method of claim 15, further comprising recognizing different types of system information based on recognizing different system information indicators in different ~~signal~~ subframes.

21. (Currently amended) A mobile station operative to receive system information on a downlink channel from a network transmitter in a wireless communications network, the mobile station comprising a baseband processor operable to:

~~begin monitoring~~ monitor for the receipt of system information ~~at the start of each time window in a succession of~~ in recurring time windows used for the transmission of system information, each said time window spanning a ~~number of signal~~ plurality of subframes;

within each time window, monitor each ~~signal~~ subframe for an indication of the presence of system information and ~~reading~~ read system information from the ~~signal~~ subframe if such information is present; and

terminate monitoring at least at the end of the time window.

22. (Currently amended) The mobile station of claim 21, wherein the baseband processor is operable to recognize an end-of-system-information indicator in a ~~signal~~ subframe received within the time window and terminate monitoring for the time window in response.

23. (Currently amended) The mobile station of claim 21, wherein the baseband processor is ~~operable to~~ configured to adapt to variable ~~changing or configurable~~ window sizes used for the time window.

24. (Original) The mobile station of claim 21, wherein the baseband processor is operable to monitor for system information transmissions based on a specified window size indicated in received information rather than a default window size.

25. (Currently amended) The mobile station of claim 21, wherein the baseband processor is operable to recognize different types of system information based on different system information indicators detected in different ~~signal~~ subframes.

26. (New) The method of claim 1 wherein the dynamically selecting comprises dynamically selecting subframes such that the same system information is assigned for transmission to different non-aligned subframes in first and second consecutive time windows.

REMARKS

Claim Amendments

Claim 14 has been canceled.

Claims 1, 10, 12, 15-17, 20, 21-23, 25 have been amended.

Claim 26 has been added.

Support for these amendments is found throughout the specification and drawings, *see*, *e.g.*, pages 4-7 and accompanying drawings. These amendments do not introduce new matter herein.

Claim Objections

The Action includes instructions to "delete all occurrences of 'adapting,' 'adapted to,' and 'operable to'.... into -- configured to --." The only places that Applicant notes use of such words is in claims 17 and 23. Applicant has amended claim 23 to change "operable to" to now read "configured to", without changing the scope thereof. With regard to claim 17, Applicant submits that "adapting to" is a positive assertion in a method claim. However, in order to improve grammar without changing claim scope, Applicant has changed "changing or configurable window sizes" in claims 17 and 23 to now read "variable window sizes." Withdrawal of the corresponding claim objection(s) is therefore requested.

§102/103 Rejections

Claims 1-4, 7-10, 12, 14-15,[1] 18, 21, 25 stand rejected under §102 as anticipated by R2-072205. Claims 5-6, 11, 13, 16-17, 19-20, 23-24 stand rejected under §103 as being obvious over R2-072205 in combination with various secondary references. Applicant requests reconsideration.

Claim 1 requires, *inter alia*, "dynamically selecting which subframes within a given time window are to be used for carrying the system information," and "including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information." R2-072205 does not show either feature.

As an initial point, Applicant notes that the Examiner misinterprets R2-072205 when the Examiner interprets fig. x of R2-072205 to show "SU-1, SU-2 and SU-3 are in a same subframe and are recurring." An examination of fig. x finds that SU-1, SU-2, and SU-3 are plainly not in the same subframe. They may be in the same frame, but are explicitly not in the same subframe. The size of the subframe is shown by the double-headed arrow. Further, the different SU's (SU-1, SU-2, SU-3) are indicated by different colors and are plainly shown as non-overlapping in both the upper and lower portions of fig. x. Thus, the SU-1, SU-2, and SU-3 in R2-072205 are quite clearly not in the same subframe, as posited by the Examiner.

The "subframe" misinterpretation of R2-072205 leads the Examiner to misinterpret R2-072205 to show dynamic selection of subframes for a given piece of

[1] The summary of the §102 rejection does not indicate that claim 14 is rejected under §102, but other text of the Action might possibly indicate that claim 14 is rejected under §102. Clarification of the record on

system information. R2-072205 does not show this. Instead, in R2-072205, the subframes to be used for transmitting the system information in a given SU are exactly determined by the periodicity and the amount of system information. This means that once the system information blocks (SIBs) have been mapped onto SUs to be scheduled for transmission the selection of subframes is fixed. There simply is no dynamic selection whatsoever of which subframes within a given time window the system information is to be transmitted in.

Further, the Examiner misconstrues the teachings of R2-072205 on the "value tags", and therefore wrongly asserts that R2-072205 teaches the claimed method of "including an indicator in each of the selected subframes." Assuming *arguendo* that the R2-072205 "value tags" are otherwise analogous to the claimed indicators, the value tags are simply not "in each of the selected subframes." R2-072205 makes clear in Section 7.4 is that "It is FFS [for future study] whether the SB [scheduling block] includes a value tag for each SU." This means that the value tag for an SU is located in the SB [scheduling block], not in the SU itself. For clarity, R2-072205 specifically states in Section 7.4 line 5-14 that Value tags are carried on the BCH, "in a System Information Block called the Master Information Block (MIB)." Thus, these value tags are carried in the MIB, which fig. x plainly shows is NOT part of SU-1, SU-2, or SU-3. Therefore, R2-072205 at most teaches that the "value tags" are carried in a different subframe than the subframes of the "SU" to which they pertain. As such, it is clear that R2-072205 simply does not contemplate "including an indicator in each of the selected

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this point is requested in the next communication from the Office. Absent such clarification, Applicant will understand that claim 14 is not rejected under §102.

subframes to indicate to receiving user equipment that the subframe carries system information."

Further still, claim 1 requires that the "indicator" -- besides being present in each of the selected subframes -- must "indicate to receiving user equipment that the subframe carries system information." There simply is no evidence that the "value tag" described by R2-072205 serves such a purpose. At most, R2-072205 states the following with regard to the "value tag":

> "It is FFS [for future study] whether the SB [scheduling block] includes a value tag for each SU, whether a common value tag is used. The common value tag could either be carried in the MIB or in the SIB."

(R2-072205, p. 5). This passage nowhere suggests that the "value tag" serves any function to "indicate to receiving user equipment that the subframe carries system information," as claimed. Indeed, the function of the "value tag" is not defined in R2-072205, so the Examiner's postulation about its purpose is nothing but conjecture. There simply is no suggestion that the presence or absence of the "value tag" can or should be interpreted by the receiving user equipment that the subframe having the "value tag" carries system information. As such, the R2-072205 "value tag" is neither present where required nor indicative of what is required by claim 1.

As pointed out above, R2-072205 fails to teach at least two limitations of claim 1. As such, independent claim 1 cannot be anticipated by R2-072205. Further, none of the other cited art cures these defects. Accordingly, independent claim 1 and its dependent claims define over the cited art.

With further regard to new dependent claim 26, this claim requires "dynamically selecting subframes such that the same system information is assigned for transmission to different non-aligned subframes in first and second consecutive time windows." In contrast to this dynamic assignment approach, R2-072205 clearly contemplates that any given piece of system information (the same system information) will be transmitted in the same subframes in each successive multi-frame time window, assuming *arguendo* that different multi-frame/scheduling periods can be considered to be different multi-frame time windows. Thus, whatever else R2-072205 may teach, it does not teach the limitations added by dependent claim 26.

For claims 10-11, Applicant notes that independent claim 10 includes limitations identical or similar to the "dynamically selecting" and "including an indicator in each selected subframe" limitations found in claim 1. Accordingly, Applicant submits that independent claim 10 and its dependent claims define over the cited art for reasons similar to those discussed above with respect to independent claim 1.

For claims 12-13, Applicant notes that independent claim 12 includes "dynamically selecting" limitations identical or similar to those found in claim 1. Accordingly, Applicant submits that independent claim 12, and its dependent claims define over the cited art for reasons similar to those discussed above with respect to independent claim 1.

For claims 15-20, 21-25 Applicant notes that independent claim 15 requires "monitoring each subframe for an indication of the presence of system information and reading system information from the subframe if such information is present" while independent claim 21 likewise requires "monitor each subframe for an indication of the presence of system information and read system information from the subframe if such information is present." The claimed monitoring of each subframe in these claims is related to the "including an indicator in each selected subframe" limitation found in claim 1. As pointed out above, R2-072205 does not show the "value tags" in each relevant subframe, but at most only in the SB. Nor does R2-072205 suggest looking for "value tags" anywhere but in the SB. Therefore, R2-072205 necessarily does not teach "monitoring" each subframe for the "value tags." Further, as pointed out above the "value tag" of R2-072205 is not "an indication of the presence of system information." Thus, R2-072205 cannot teach "monitor[ing] each subframe for an indication of the presence of system information and read[ing] system information from the subframe if such information is present," as claimed. As such, Applicant submits that independent claims 15 and 21, and their corresponding dependent claims, define over the cited art for reasons similar to those discussed above with respect to independent claim 1.

For the forgoing reasons, it is respectfully urged that the present application is in condition for allowance and notice to such effect is respectfully requested.

Respectfully submitted,
COATS & BENNETT, P.L.L.C.

Dated: 11 June 2012

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Electronic Patent Application Fee Transmittal

Application Number:	12664347
Filing Date:	11-Dec-2009
Title of Invention:	Transmission of System Information on a Downlink Shared Channel
First Named Inventor/Applicant Name:	Erik Dahlman
Filer:	John R. Owen/Cora Fedornock
Attorney Docket Number:	4015-6727 / P24241-US2

Filed as Large Entity

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 3 months with $0 paid	1253	1	1270	1270

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**1270**

Electronic Acknowledgement Receipt

EFS ID:	12981583
Application Number:	12664347
International Application Number:	
Confirmation Number:	1464
Title of Invention:	Transmission of System Information on a Downlink Shared Channel
First Named Inventor/Applicant Name:	Erik Dahlman
Customer Number:	24112
Filer:	John R. Owen/Cora Fedornock
Filer Authorized By:	John R. Owen
Attorney Docket Number:	4015-6727 / P24241-US2
Receipt Date:	11-JUN-2012
Filing Date:	11-DEC-2009
Time Stamp:	15:01:58
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Electronic Funds Transfer
Payment was successfully received in RAM	$1270
RAM confirmation Number	1554
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1		40156727RESPONSE.pdf	545720 f523745944e52e3b86e0b22602f78a4f7027c2b0	yes	14

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	7
	Applicant Arguments/Remarks Made in an Amendment	8	14

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	30076 a0864b325202066e151178df5248fee98b949a4d	no	2

Warnings:

Information:

Total Files Size (in bytes):	575796

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<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
12/664,347	12/11/2009	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☐ RATE ($)	SMALL ENTITY ☐ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	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).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	06/11/2012	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 25	Minus	** 25	= 0	X $ =		OR	X $60=	0
	Independent (37 CFR 1.16(h))	* 5	Minus	***4	= 1	X $ =		OR	X $250=	250
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	250

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L 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".

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Seq No: 1 Sales Acctg Dt: 06/14/2012 181167 12664347
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/664,347	12/11/2009	Erik Dahlman	4015-6727 / P24241-US2	1464

24112 7590 12/20/2011

COATS & BENNETT, PLLC
1400 Crescent Green, Suite 300
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EXAMINER	
WONG, XAVIER S	
ART UNIT	PAPER NUMBER
2462	

MAIL DATE	DELIVERY MODE
12/20/2011	PAPER

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

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	12/664,347	DAHLMAN ET AL.	
	Examiner	Art Unit	
	Xavier Szewai Wong	2462	

-- 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) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, 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 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 *11th December 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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

5)☒ Claim(s) *1-25* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-25* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *11th December 2009* 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).

12)☐ 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

13)☒ 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)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12.11.2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d).

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 11th December 2009 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Objections

Delete all occurrences of "adapting," "adapted to" and "operable to" because these terms lack positive assertion, e.g. change them into -- configured to --. Appropriate correction is required.

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 –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1 – 4, 7 – 10, 12, 15, 18, 21 and 25 are rejected under 35 U.S.C. 102(a) as being anticipated by "Draft Text Proposal Capturing Agreements on System Information" (R2-072205).

1. R2-072205 teaches a method of transmitting system information on the downlink of a wireless communication network (sec 7.4 downlink system) comprising: transmitting system information in recurring time windows overlaid on a sequence of transmit channel subframes (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are

recurring); dynamically selecting which subframes within a given time window are to be used for carrying the system information (sec 7.4 – An SU may be segmented, in which case segments are scheduled… eNB may schedule more than one SU in a subframe); and including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information (sec 7.4 – SB value tag in each SU).

10. R2-072205 teaches a network transmitter comprising a baseband processor (fig. 5.4.1.2) configured to: generate system information in recurring time windows overlaid on a sequence of transmit channel subframes (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); dynamically select which subframes within a given time window are to be used for carrying system information (sec 7.4 – An SU may be segmented, in which case segments are scheduled… eNB may schedule more than one SU in a subframe); and include an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information (sec 7.4 – SB value tag in each SU).

12. R2-072205 teaches a method of transmitting system information on a downlink shared channel structured as successive subframes (fig. 5.4.1.2 and fig. x), the method comprising: transmitting system information in regularly occurring time windows (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are recurring), each time window spanning some number of successive subframes (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); and indicating to receiving user equipment which subframes within a given time window carry system information (sec 7.4 – SB value tag in each SU).

15. R2-072205 teaches a method for a mobile station to receive system information from a supporting wireless communication network (fig. 5.4.1.2:: UE), the method comprising: beginning monitoring for the receipt of system information at the start of each time window in a succession of recurring time windows used for the transmission of system information (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are recurring), each said time window spanning a number of signal subframes (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); within each time window, monitoring each signal subframe for an indication of system information and reading system information from the signal subframe if such information is present (sec 7.4 – SB value tag in each SU); and terminating monitoring at least at the end of the time window (if there are no more subframes to be monitored, it is only reasonable to terminate monitoring).

21. R2-072205 teaches a mobile station comprising a baseband processor (fig. 5.4.1.2:: UE) operable to: begin monitoring for the receipt of system information at the start of each time window in a succession of recurring time windows used for the transmission of system information (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are recurring), each said time window spanning a number of signal subframes (fig. x:: SU-1, SU-2 and SU-3 are in a same subframe and are recurring); within each time window,

monitor each signal subframe for an indication of system information and reading system information from the signal subframe if such information is present (fig. x:: SIB); and terminate monitoring at least at the end of the time window (if there are no more subframes to be monitored, it is only reasonable to terminate monitoring).

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2. R2-072205 teaches the method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a contiguous set of subframes within the given time window (fig. x:: subframes 3 and 131).

3. R2-072205 teaches the method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a non-contiguous set of subframes within the given time window (fig. x:: subframes 19 and 67).

4. R2-072205 teaches the method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting which subframes to use for transmitting system information in view of competing transmission priorities associated with other control or data signaling (fig. x:: SIB).

7. R2-072205 teaches the method of claim 1, further comprising varying window sizes of the recurring time windows (fig. x:: SU-1, SU-2 and SU-3 have different sizes).

8. R2-072205 teaches the method of claim 1, further comprising dynamically configuring a window size for the recurring time windows (sec. 7.4 – MIB paragraph).

9. R2-072205 teaches the method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using different indicators corresponding to different types of system information (sec 7.4 – MIB paragraph), such that the indicator used for a particular subframe indicates the type of system information carried in that subframe (sec 7.4 – SIB).

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11. R2-072205 teaches the network transmitter of claim 10, wherein the network transmitter comprises a radio base station configured for operation in accordance with 3GPP E-UTRA standards (3GPP TSG-RAN2).

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14. R2-072205 teaches the method of claim 12, further comprising dynamically selecting which subframes within a given time window are to be used for carrying system information (fig. x:: SIB).

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18. R2-072205 teaches the method of claim 15, further comprising storing a default window size for monitoring for system information transmissions (fig. x:: SU-1, SU-2 and SU-3 have default sizes).

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25. R2-072205 teaches the mobile station of claim 21, wherein the baseband processor is operable to recognize different types of system information based on different system information indicators detected in different signal subframes (fig. x:: SIB-a,b,c,d,e).

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 negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over "Draft Text Proposal Capturing Agreements on System Information" (R2-072205) in view of "System Information Scheduling and Change Notification" (R2-071912).

5. R2-072205 teaches the method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information; R2-072205 does not very explicitly show it comprises using an RNTI (Radio Network Temporary Identifier) to denote that the subframe carries system information. R2-071912 explicitly teaches subframes indicators are in RNTI format (page 3 bottom). It would have been obvious to one of ordinary skill in the art when the invention was made to understand that both R2 documents refer to the same 3GPP systems information techniques and the R2-072205 (primary reference), while being silent on its application to the indications, also uses RNTI.

Claims 17, 19, 20, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Draft Text Proposal Capturing Agreements on System Information" (R2-072205) in view of Marinier et al (US 2008/0225765 A1, Marinier).

17. R2-072205 teaches the method of claim 15; R2-072205 may not have explicitly mentioned further comprising adapting to changing or configurable window sizes used for the time window. Marinier teaches changing or configurable window sizes used for the time window ([0457]). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 to allow configurable window sizes to facilitate reordering procedure.

19. R2-072205 teaches the method of claim 18; R2-072205 does not explicitly mention further comprising monitoring for system information transmissions based on a specified window size indicated in received information rather than the default window size. Marinier teaches monitoring for system information transmissions based on a specified window size indicated in received information rather than a default window size ([0457]:: if window size is changed for reordering purpose, then it is only reasonable that the changing window sizes are monitored). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 to allow configurable window sizes to facilitate reordering procedure.

20. R2-072205 teaches the method of claim 15; R2-072205 does not explicitly mention further comprising recognizing different types of system information based on recognizing different system information indicators in different signal subframes.

Marinier teaches recognizing different types of system information based on recognizing different system information indicators in different signal subframes ([0457]:: if window size is changed for reordering purpose, then it is only reasonable that the changing window sizes are recognized). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 to allow configurable window sizes to facilitate reordering procedure.

23. R2-072205 teaches the mobile station of claim 21; R2-072205 may not have explicitly mentioned wherein the baseband processor is operable to adapt to changing or configurable window sizes used for the time window. Marinier teaches changing or configurable window sizes used for the time window ([0457]). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 to allow configurable window sizes to facilitate reordering procedure.

24. R2-072205 teaches the mobile station of claim 21; R2-072205 does not explicitly mention wherein the baseband processor is operable to monitor for system information transmissions based on a specified window size indicated in received information rather than a default window size. Marinier teaches monitoring for system information transmissions based on a specified window size indicated in received information rather than a default window size ([0457]:: if window size is changed for reordering purpose, then it is only reasonable that the changing window sizes are monitored). It would have been obvious to one of ordinary skill in the art when the invention was made to modify the method in R2-072205 to allow configurable window sizes to facilitate reordering procedure.

Claims 6, 13, 16 and 22 are rejected under 35 U.S.C. 103(a) as being

unpatentable over “Draft Text Proposal Capturing Agreements on System Information”

(R2-072205) in view of Kashima et al (US 2007/0217362 A1, Kashima).

6. R2-072205 teaches the method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information; R-072205 does not explicitly shows it includes using an end-of-system-information indicator in a last subframe of the given time window that carries system information. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information (0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 to maintain flexibility of scheduling.

13. R2-072205 teaches the method of claim 12; R-072205 does not explicitly shows wherein indicating to receiving user equipment which subframes within a given time window carry system information includes indicating the last subframe within the given time window that carries system information, thereby allowing the receiving user equipment to cease monitoring for system information within the given time window. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information so to cease monitoring within a given time (0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 as a flexibility to scheduling subframes.

16. R2-072205 teaches the method of claim 15; R-072205 does not explicitly shows it further comprising recognizing an end-of-system-information indicator in a signal subframe received within the time window and terminating monitoring for the time window in response. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information (0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 to maintain flexibility of scheduling.

22. R2-072205 teaches the mobile station of claim 21; R-072205 does not explicitly shows wherein the baseband processor is operable to recognize an end-of-system-information indicator in a signal subframe received within the time window and terminate monitoring for the time window in response. Kashima teaches an end-of-system-information indicator in a last subframe of the given time window that carries system information (0069 and 0072). It would have been obvious to one of ordinary skill in the art when the invention was made to program an end-of-system information function as taught by Kashima to the indicator method in R2-072205 to maintain flexibility of scheduling.

Conclusion

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

1. Tenny, US 2008/0225823 A1:: scheduling of dynamic broadcast channel

2. Umesh et al, US 2009/0303939 A1:: shared data channel assigning

3. Nguyen, US 2006/0034245 A1:: showing a part of the HS-SCCH subframe or a part of its associated HS-PDSCH subframe overlaps with a downlink transmission gap on the associated DPCH, fig. 6.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xavier Wong whose telephone number is 571.270.1780. The examiner can normally be reached on Monday through Friday 10:30 am - 8:00 pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571.272.3174. 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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800.786.9199 (IN USA OR CANADA) or 571.272.1000.

/Xavier Szewai Wong/
Primary Examiner, Art Unit 2462
17th December 2011

Notice of References Cited	Application/Control No. 12/664,347	Applicant(s)/Patent Under Reexamination DAHLMAN ET AL.	
	Examiner Xavier Szewai Wong	Art Unit 2462	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2009/0303939 A1	12-2009	Umesh et al.	370/329
*	B	US-2008/0225823 A1	09-2008	Tenny, Nathan Edward	370/345
*	C	US-2008/0225765 A1	09-2008	Marinier et al.	370/310
*	D	US-2007/0217362 A1	09-2007	Kashima et al.	370/330
*	E	US-2006/0034245 A1	02-2006	Nguyen, Phong	370/345
	F	US-			
	G	US-			
	H	US-			
	I	US-			
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FOREIGN PATENT DOCUMENTS

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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.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	273924	("370"/$.ccls. "455"/$.ccls.) and (@rlad < "20070618" @ad < "20070618")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 21:16
L3	3	L2 and (over$1lap $5 over$1laid) with (scheduling adj unit SU SU$2) same (system adj information SIB)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 21:16
L4	1618	L2 and (over$1lap $5 over$1laid) with (scheduling adj unit SU SU$2)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 21:18
L5	51	L2 and (over$1lap $5 over$1laid) near3 (scheduling adj unit SU SU$2) and (system adj information SIB)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 21:18
L7	23	L2 and (over$1lap $5 over$1laid) with sub$1frame with channel	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 21:56

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CONFIRMATION NO. 1464

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
12/664,347	12/11/2009	370	2462	4015-6727 / P24241-US2

APPLICANTS

Erik Dahlman, Bromma, SWEDEN;
Vera Vukajlovic, Stockholm, SWEDEN;

**** CONTINUING DATA **************************

This application is a 371 of PCT/SE2008/050407 04/10/2008
which claims benefit of 60/944,628 06/18/2007

**** FOREIGN APPLICATIONS ************************** Verified /XSW/ 2011.12.17

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08/13/2010

Foreign Priority claimed ☑ Yes ☐ No 35 USC 119(a-d) conditions met ☑ Yes ☐ No Verified and Acknowledged /Xavier Szewai Wong/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		SWEDEN	6	25	5

ADDRESS

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TITLE

Transmission of System Information on a Downlink Shared Channel

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BIB (Rev. 05/07).

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99**)		
	Application Number	12/664347
	Filing Date	2009.12.11
	First Named Inventor	Dahlman
	Art Unit	2462
	Examiner Name	/Xavier Szewai Wong/
	Attorney Docket Number	4015-6727

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/XSW/	1	1799003	EP	A1	2007-06-20	Matsushita Electric Industrial Co., Ltd.		☐
/XSW/	2	2007/052917	WO	A1	2007-05-10	LG Electronics, Inc.		☐
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Dahlman
	Art Unit	
	Examiner Name	
	Attorney Docket Number	4015-6727

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
/XSW/	1	3RD GENERATION PARTNERSHIP PROJECT. "System Information Scheduling and Change Notification." 3GPP TSG-RAN2 Meeting #58, Tdoc R2-071912, Kobe, Japan, 7-11 May 2007.	☐
	2	3RD GENERATION PARTNERSHIP PROJECT. "Draft Text Proposal Capturing Agreements on System Information." 3GPP TSG-RAN2 Meeting #58, Tdoc R2-072205, Kobe, Japan, 7-11 May 2007.	☐
	3	3RD GENERATION PARTNERSHIP PROJECT. "Transmission of Dynamic System Information." 3GPP TSG-RAN2 Meeting #58bis, R2-072543, Orlando, FL, US, 25-29 June 2007.	☐
	4	3RD GENERATION PARTNERSHIP PROJECT. "Transmission of Dynamic System Information." 3GPP TSG-RAN2 Ad-hoc Meeting, Tdoc R2-075559, Vienna, Austria, 13-14 December 2007.	☐
	5	3RD GENERATION PARTNERSHIP PROJECT. 3GPP TS 36.300 V8.0.0 (2007-03). 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access network (E-UTAN); Overall description; Stage 2 (Release 8).	☐

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Examiner Signature	/Xavier Szewai Wong/	Date Considered	2011.12.17

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	12/664347	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 06:17
L2	49196	(Dahlman Vukajlovic).IN. Ericsson.AS.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 06:32
L3	2	L2 and (re$1cur $5 adj2 window).clm.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 06:38

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L4	10008	(Dahlman Vukajlovic).IN. Ericsson.AS.	USPAT; UPAD	OR	ON	2011/12/18 06:38
L5	1	L4 and (re$1cur $5 adj2 window).clm.	USPAT; UPAD	OR	ON	2011/12/18 06:38
L6	6	L4 and RNTI.clm.	USPAT; UPAD	OR	ON	2011/12/18 06:55

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	23391	(370/311,328-334,468.ccls. 455/422.1.ccls.) and (@rlad < "20070618" @ad < "20070618")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 13:55
L2	44	L1 and RNTI same (schedul$5 SU SU $2)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 13:55
L4	425	L1 and (repetitive repeat$3 recurr$5) with (schedul$5 adj unit SU SU$2)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 14:17
L5	2	L1 and (repetitive repeat$3 recurr$5) with (schedul$5 adj unit SU SU$2) and RNTI	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 14:18
L6	273924	("370"/$.ccls. "455"/$.ccls.) and (@rlad < "20070618" @ad < "20070618")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 14:19
L7	1	L6 and (repetitive repeat$3 recurr$5) with (schedul$5 adj unit SU) and RNTI	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 14:19
L8	10	L6 and (repetitive repeat$3 recurr$5) with window and RNTI	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 14:24
L9	0	L6 and (overlap5 over$1laid) with (schedul$5 adj unit SU) and RNTI	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 14:27

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EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	23391	(370/311,328-334,468.ccls. 455/422.1.ccls.) and (@rlad < "20070618" @ad < "20070618")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 13:55
L6	273924	("370"/$.ccls. "455"/$.ccls.) and (@rlad < "20070618" @ad < "20070618")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 14:19
L11	37	L1 and RNTI same (schedul$5 SU SU $2) and (repeat$6 repetitive recurr$5 over$1lap$5 over $1laid)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 14:36
L12	15	L1 and RNTI same (schedul$5 SU SU $2) and (repeat$6 repetitive recurr$5 over$1lap$5 over $1laid) and (window system adj information)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 14:37
L13	37	L1 and RNTI same (schedul$5 SU SU $2) and (repeat$6 repetitive recurr$5 over$1lap$5 over $1laid) and (window system adj information RNTI)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 14:37
L14	43	L6 and RNTI same (schedul$5 SU SU $2) and (repeat$6 repetitive recurr$5 over$1lap$5 over $1laid) and (window system adj information)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 14:52

L15	2	L6 and RNTI and (schedul$5 SU SU $2) same (repeat$6 repetitive recurr$5 over$1lap$5 over $1laid) with sub $1frame	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 15:19

EAST Search History (Interference)

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L6	273924	("370"/$.ccls. "455"/$.ccls.) and (@rlad < "20070618" @ad < "20070618")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 14:19
L7	1	L6 and (repetitive repeat$3 recurr$5) with (schedul$5 adj unit SU) and RNTI	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 14:19
L8	10	L6 and (repetitive repeat$3 recurr$5) with window and RNTI	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 14:24
L9	1	L6 and (over$lap $5 over$1laid) with window and RNTI	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 14:30
L10	1	L6 and (repetitive repeat$3 recurr$5) with (schedul$5 adj unit SU) and RNTI and system adj information	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 14:31

EAST Search History (Interference)

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Google scholar SI-RNTI OR "end-of-system information RNTI" Search Advanced Scholar Search

Scholar Articles and patents - 2007 include citations Create email alert Results **1 - 4** ‹

[BOOK] How insects affect the cotton plant and means of combating them [HTML]
WD Pierce - 1917 - books.google.com
... ina) Ia, oiti mii..I tpm irui n tlw i'ni..iilu ut I-uM»,Uwu.sl L . S. Deion uiou ia .Vglivuliure. Page 6. / I KAn MI .iIS ' I;ri.i.KTI.N s:HI. Inseet attaek ; ig; i iii **sl rntl** on begins With tin. Seedlinl' und eon ,nuns nniil the |il:iIiI is destro\ed when pieking is over. Ii seems hest . I herefoiv. In I Ii . **...**
Cited by 5 - Related articles - Library Search - All 2 versions

Sull'interruttore di Wehnelt
OM Corbino - Il Nuovo Cimento (1895-1900), 1900 - Springer
... anode non 6 maggiore di quella di pl'ima. Espe,~'ienza 3". --~ Sullo s~esso nucleo di levee sono av- volt.i due **si~rnti** (Ii file gPosso, i qunli fan pnrte di un civcuito Page 3. (34 O. 31. CORBINO the contiene anche una batteria di 5 **...**

Using untagged B^{0}→ DK_ {S} to determine γ [PDF]
M Gronau, Y Grossman, N Shuhmaher, A Soffer… - Physical Review D, 2004 - APS
Page 1. Using untagged B0\DKS to determine M. Gronau,1 Y. Grossman,1,2,3 N. Shuhmaher,1 A. Soffer,4 and J. Zupan1,5 1Department of Physics, Technion–Israel Institute of Technology, Technion City, 32000 Haifa, Israel **...**
Cited by 26 - Related articles - BL Direct - All 15 versions

불꽃기-수분해 증착에 의한 Ti-doped BSG 도파박막의 제작
전영윤 , 이용태 , 전은숙 , 정석종… - 한국광학회지, 1994 - dbpia.co.kr
... Tio, doped BSG 박막이 BSG 박막의 흡수대 역과 유사하게 나타났다. 이것은 **Si-rnTi** 결합 흡수대역 T8이im가S01i7c첨0를가나나되Si타지C내-B않고는흡있수B었S대G지역의만에경굴포우절함B률된, o변,것화의으를로함고량여이려겨진최할다대때. 10mol%가 추정되고 있다. **...**

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SI-RNTI OR "end-of-system informa Search

About Google Scholar - About Google - My Citations

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	273924	("370"/$.ccls. "455"/$.ccls.) and (@rlad < "20070618" @ad < "20070618")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 21:16
L11	177	L2 and (modif$6 chang$1able) with window adj size	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/19 00:10
L12	1	L2 and (modif$6 chang$1able) with window adj size and SIB	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/19 00:10

EAST Search History (Interference)

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12/19/2011 12:36:19 AM
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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	273924	("370"/$.ccls. "455"/$.ccls.) and (@rlad < "20070618" @ad < "20070618")	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 21:16
L8	1	"SI-RNTI" and "ESI-RNTI"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 23:04
L9	0	L2 and RNTI with (end adj system)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2011/12/18 23:09

EAST Search History (Interference)

<This search history is empty>

12/18/2011 11:10:12 PM
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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12664347	DAHLMAN ET AL.
	Examiner	Art Unit
	Xavier Szewai Wong	2462

SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
EAST image, class and keyword search in USPAT, US-PGPUB, DERWENT, EPO, JPO, and IBM_TDB (please see search history)	2011.12.17	/XSW/
Inventor Name and Assignee search in PALM and EAST	2011.12.17	/XSW/
EAST combined subclass, image and text search:: 370/311,328-334,468 and 455/422.1	2011.12.17	/XSW/

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/664,347	12/11/2009	Erik Dahlman	4015-6727 / P24241-US2

CONFIRMATION NO. 1464

24112
COATS & BENNETT, PLLC
1400 Crescent Green, Suite 300
Cary, NC 27518

PUBLICATION NOTICE

OC000000044679708

Title: Transmission of System Information on a Downlink Shared Channel

Publication No.US-2010-0297991-A1
Publication Date:11/25/2010

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
12/664,347	12/11/2009		1680	4015-6727 / P24241-US2	25	5

CONFIRMATION NO. 1464

24112
COATS & BENNETT, PLLC
1400 Crescent Green, Suite 300
Cary, NC 27518

FILING RECEIPT

Date Mailed: 08/17/2010

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Erik Dahlman, Bromma, SWEDEN;
Vera Vukajlovic, Stockholm, SWEDEN;

Assignment For Published Patent Application

TELEFONAKTIEBOLAGET LM ERICSSON (PUBL), Stockholm, SE

Power of Attorney: The patent practitioners associated with Customer Number 24112

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/SE2008/050407 04/10/2008
which claims benefit of 60/944,628 06/18/2007

Foreign Applications

If Required, Foreign Filing License Granted: 08/13/2010

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/664,347**

Projected Publication Date: 11/25/2010

Non-Publication Request: No

Early Publication Request: No

Title

Transmission of System Information on a Downlink Shared Channel

Preliminary Class

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

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Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

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This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

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www.uspto.gov

U.S. APPLICATION NUMBER NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
12/664,347	Erik Dahlman	4015-6727 / P24241-US2

24112
COATS & BENNETT, PLLC
1400 Crescent Green, Suite 300
Cary, NC 27518

INTERNATIONAL APPLICATION NO.	
PCT/SE2008/050407	
I.A. FILING DATE	PRIORITY DATE
04/10/2008	06/18/2007

CONFIRMATION NO. 1464
371 ACCEPTANCE LETTER

OC000000043055459

Date Mailed: 08/17/2010

NOTICE OF ACCEPTANCE OF APPLICATION UNDER 35 U.S.C 371 AND 37 CFR 1.495

The applicant is hereby advised that the United States Patent and Trademark Office in its capacity as a Designated / Elected Office (37 CFR 1.495), has determined that the above identified international application has met the requirements of 35 U.S.C. 371, and is ACCEPTED for national patentability examination in the United States Patent and Trademark Office.

The United States Application Number assigned to the application is shown above and the relevant dates are:

12/11/2009	12/18/2009
DATE OF RECEIPT OF 35 U.S.C. 371(c)(1), (c)(2) and (c)(4) REQUIREMENTS	DATE OF COMPLETION OF ALL 35 U.S.C. 371 REQUIREMENTS

A Filing Receipt (PTO-103X) will be issued for the present application in due course. **THE DATE APPEARING ON THE FILING RECEIPT AS THE " FILING DATE" IS THE DATE ON WHICH THE LAST OF THE 35 U.S.C. 371 (c)(1), (c)(2) and (c)(4) REQUIREMENTS HAS BEEN RECEIVED IN THE OFFICE. THIS DATE IS SHOWN ABOVE.** *The filing date of the above identified application is the international filing date of the international application (Article 11(3) and 35 U.S.C. 363).* Once the Filing Receipt has been received, send all correspondence to the Group Art Unit designated thereon.

The following items have been received:

- Copy of the International Application filed on 12/11/2009
- Copy of the International Search Report filed on 12/11/2009
- Copy of IPE Report filed on 12/11/2009
- Preliminary Amendments filed on 12/11/2009
- Information Disclosure Statements filed on 12/11/2009
- Oath or Declaration filed on 12/11/2009
- U.S. Basic National Fees filed on 12/11/2009
- Assignee Statement for PGPUB filed on 12/11/2009
- Priority Documents filed on 12/11/2009
- Power of Attorney filed on 12/23/2009

FORM PCT/DO/EO/903 (371 Acceptance Notice)

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

KAREN R MCLEAN

Telephone: (703) 756-1463

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby appoint the Practitioners associated with the following Customer Number:

24112

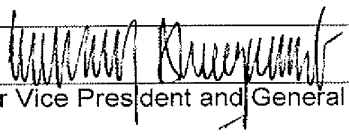
as attorneys or agents to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b). This appointment will automatically lapse five years after the date of execution of this document unless earlier revoked.

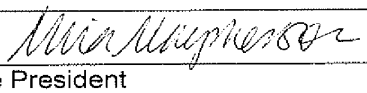
Assignee Name and Address:

Telefonaktiebolaget L M Ericsson (publ)
SE-164 83 Stockholm
Sweden

SIGNATURE of Assignee of Record

The individuals whose signatures and titles are supplied below are authorized to act on behalf of the assignee

Name: Carl Olof Blomqvist		
Signature 	Date	October 15, 2007
Title: Senior Vice President and General Counsel	Telephone	+46 8 7198250

Name: Nina Macpherson		
Signature 	Date	October 15, 2007
Title: Vice President	Telephone	+46 8 7190619

PTO/SB/96 (04-07)
Approved for use through 09/30/2007. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Dahlman

Application No./Patent No.: 12/664,347 Filed/Issue Date: December 11, 2009

Entitled: Transmission of System Information on a Downlink Shared Channel

Telefonaktiebolaget LM Ericsson (publ), a Corporation
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☑ the assignee of the entire right, title, and interest; or

2. ☐ an assignee of less than the entire right, title and interest
(The extent (by percentage) of its ownership interest is_____ %)

in the patent application/patent identified above by virtue of either:

A. ☑ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 023644, Frame 0119, or for which a copy thereof is attached.

OR

B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

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The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

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The document was recorded in the United States Patent and Trademark Office at
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☐ Additional documents in the chain of title are listed on a supplemental sheet.

☐ As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (*i.e.,* a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Michael D. Murphy/	December 23, 2009
Signature	Date
Michael D. Murphy	919-854-1844
Printed or Typed Name	Telephone Number
Attorney, Reg. No. 44,958	
Title	

Electronic Acknowledgement Receipt	
EFS ID:	6704176
Application Number:	12664347
International Application Number:	
Confirmation Number:	1464
Title of Invention:	Transmission of System Information on a Downlink Shared Channel
First Named Inventor/Applicant Name:	Erik Dahlman
Customer Number:	24112
Filer:	Michael Murphy/Laura Wade
Filer Authorized By:	Michael Murphy
Attorney Docket Number:	4015-6727 / P24241-US2
Receipt Date:	23-DEC-2009
Filing Date:	
Time Stamp:	17:30:05
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	POA.pdf	29796 cc366f6b785e3a92ff7d215f19176ecdfb394bcb	no	1
Warnings:					
Information:					

2	Assignee showing of ownership per 37 CFR 3.73(b).	SB96.pdf	43093 2f548205ad94c9f4650fada12fc30e2f03e083de	no	1

Warnings:	
Information:	
Total Files Size (in bytes):	72889

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Client Ref. P24241-US2
Attorney Ref. 4015-6727

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: **Dahlman**, *et al.*	)	
Serial No.: TBA	)	Examiner (Unknown)
Filed: TBA	)	Group Art Unit (Unknown)
For: **Transmission of System Information on a Downlink Shared Channel**	)	
Attorney Docket No. 4015-6727	)	

Cary, North Carolina
11 December 2009

PRELIMINARY AMENDMENT

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

Sir:

Please be advised that this is a **U.S. National Stage Filing of PCT Application PCT/SE2008/050407.**

Prior to examination, please amend the application as indicated below.

Amendments to the Claims

1. (Currently amended) A method of transmitting system information on the downlink of a wireless communication network comprising:

transmitting ~~(410)~~ system information in recurring time windows overlaid on a sequence of transmit channel subframes;

dynamically selecting ~~(402)~~ which subframes within a given time window are to be used for carrying the system information; and

including ~~(406 / 408)~~ an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

2. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a contiguous set of subframes within the given time window.

3. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a non-contiguous set of subframes within the given time window.

4. (Original) The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting which subframes to use for transmitting system information in view of competing transmission priorities associated with other control or data signaling.

5. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information comprises using an RNTI (Radio Network Temporary Identifier) to denote that the subframe carries system information.

6. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using an end-of-system-information indicator in a last subframe of the given time window that carries system information.

7. (Original) The method of claim 1, further comprising varying window sizes of the recurring time windows.

8. (Original) The method of claim 1, further comprising dynamically configuring a window size for the recurring time windows.

9. (Original) The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using different indicators corresponding to different types of system information, such that the indicator used for a particular subframe indicates the type of system information carried in that subframe.

10. (Currently amended) A network transmitter ~~(110)~~ comprising a baseband processor ~~(130)~~ configured to:

generate system information in recurring time windows overlaid on a sequence of transmit channel subframes;

dynamically select which subframes within a given time window are to be used for carrying system information; and

include an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

11. (Original) The network transmitter of claim 10, wherein the network transmitter comprises a radio base station configured for operation in accordance with 3GPP E-UTRA standards.

12. (Currently amended) A method of transmitting system information on a downlink shared channel structured as successive subframes, the method comprising:

transmitting ~~(400 – 416)~~ system information in regularly occurring time windows, each time window spanning some number of successive subframes; and

indicating ~~(406 / 408)~~ to receiving user equipment which subframes within a given time window carry system information.

13. (Original) The method of claim 12, wherein indicating to receiving user equipment which subframes within a given time window carry system information includes indicating

the last subframe within the given time window that carries system information, thereby allowing the receiving user equipment to cease monitoring for system information within the given time window.

14. (Original) The method of claim 12, further comprising dynamically selecting which subframes within a given time window are to be used for carrying system information.

15. (Currently amended) A method for a mobile station to receive system information from a supporting wireless communication network, the method comprising:

beginning monitoring ~~(500 and 502)~~ for the receipt of system information at the start of each time window in a succession of recurring time windows used for the transmission of system information, each said time window spanning a number of signal subframes;

within each time window, monitoring ~~(504 – 510)~~ each signal subframe for an indication of system information and reading system information from the signal subframe if such information is present; and

terminating monitoring ~~(512)~~ at least at the end of the time window.

16. (Original) The method of claim 15, further comprising recognizing an end-of-system-information indicator in a signal subframe received within the time window and terminating monitoring for the time window in response.

17. (Original) The method of claim 15, further comprising adapting to changing or configurable window sizes used for the time window.

18. (Original) The method of claim 15, further comprising storing a default window size for monitoring for system information transmissions.

19. (Original) The method of claim 18, further comprising monitoring for system information transmissions based on a specified window size indicated in received information rather than the default window size.

20. (Original) The method of claim 15, further comprising recognizing different types of system information based on recognizing different system information indicators in different signal subframes.

21. (Currently amended) A mobile station ~~(120)~~ comprising a baseband processor ~~(140)~~ operable to:

begin monitoring for the receipt of system information at the start of each time window in a succession of recurring time windows used for the transmission of system information, each said time window spanning a number of signal subframes;

within each time window, monitor each signal subframe for an indication of system information and reading system information from the signal subframe if such information is present; and

terminate monitoring at least at the end of the time window.

22. (Original) The mobile station of claim 21, wherein the baseband processor is operable to recognize an end-of-system-information indicator in a signal subframe received within the time window and terminate monitoring for the time window in response.

23. (Original) The mobile station of claim 21, wherein the baseband processor is operable to adapt to changing or configurable window sizes used for the time window.

24. (Original) The mobile station of claim 21, wherein the baseband processor is operable to monitor for system information transmissions based on a specified window size indicated in received information rather than a default window size.

25. (Original) The mobile station of claim 21, wherein the baseband processor is operable to recognize different types of system information based on different system information indicators detected in different signal subframes.

Remarks

Applicant submits the foregoing claim amendments prior to examination on the merits for consideration by the Examiner. The amendments revise claims 1-25 by removing reference numbers. The claims are otherwise unchanged; thus, no new matter has been added.

Applicant respectfully requests that the Examiner enter the amendments prior to examination on the merits.

Respectfully submitted,

COATS & BENNETT P.L.L.C.

Date: 11 December 2009

Michael D. Murphy
Registration No. 44,958
Telephone: (919) 854-1844

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-09)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	
	Filing Date	
	First Named Inventor	Dahlman
	Art Unit	
	Examiner Name	
	Attorney Docket Number	4015-6727

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	1	1799003	EP	A1	2007-06-20	Matsushita Electric Industrial Co., Ltd.		☐
	2	2007/052917	WO	A1	2007-05-10	LG Electronics, Inc.		☐
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Dahlman
	Art Unit	
	Examiner Name	
	Attorney Docket Number	4015-6727

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	3RD GENERATION PARTNERSHIP PROJECT. "System Information Scheduling and Change Notification." 3GPP TSG-RAN2 Meeting #58, Tdoc R2-071912, Kobe, Japan, 7-11 May 2007.	☐
	2	3RD GENERATION PARTNERSHIP PROJECT. "Draft Text Proposal Capturing Agreements on System Information." 3GPP TSG-RAN2 Meeting #58, Tdoc R2-072205, Kobe, Japan, 7-11 May 2007.	☐
	3	3RD GENERATION PARTNERSHIP PROJECT. "Transmission of Dynamic System Information." 3GPP TSG-RAN2 Meeting #58bis, R2-072543, Orlando, FL, US, 25-29 June 2007.	☐
	4	3RD GENERATION PARTNERSHIP PROJECT. "Transmission of Dynamic System Information." 3GPP TSG-RAN2 Ad-hoc Meeting, Tdoc R2-075559, Vienna, Austria, 13-14 December 2007.	☐
	5	3RD GENERATION PARTNERSHIP PROJECT. 3GPP TS 36.300 V8.0.0 (2007-03). 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access network (E-UTAN); Overall description; Stage 2 (Release 8).	☐

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Examiner Signature		Date Considered	

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Dahlman
	Art Unit	
	Examiner Name	
	Attorney Docket Number	4015-6727

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Michael D. Murphy/	Date (YYYY-MM-DD)	2009-12-11
Name/Print	Michael D. Murphy	Registration Number	44958

This collection of information is required by 37 CFR 1.97 and 1.98. 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 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: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal	
Application Number:	
Filing Date:	
Title of Invention:	Transmission of System Information on a Downlink Shared Channel
First Named Inventor/Applicant Name:	Erik Dahlman
Filer:	Michael Murphy/Laura Wade
Attorney Docket Number:	4015-6727 / P24241-US2
Filed as Large Entity	

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
National Stage Fee	1631	1	330	330
Natl Stage Search Fee - Report provided	1642	1	430	430
National Stage Exam - all other cases	1633	1	220	220
Pages:				
Claims:				
Claims in excess of 20	1615	5	52	260
Independent claims in excess of 3	1614	2	220	440
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1680**

Electronic Acknowledgement Receipt	
EFS ID:	6623076
Application Number:	12664347
International Application Number:	PCT/SE08/50407
Confirmation Number:	1464
Title of Invention:	Transmission of System Information on a Downlink Shared Channel
First Named Inventor/Applicant Name:	Erik Dahlman
Customer Number:	24112
Filer:	Michael Murphy/Laura Wade
Filer Authorized By:	Michael Murphy
Attorney Docket Number:	4015-6727 / P24241-US2
Receipt Date:	11-DEC-2009
Filing Date:	
Time Stamp:	17:51:39
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Electronic Funds Transfer
Payment was successfully received in RAM	$1680
RAM confirmation Number	4107
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Application Data Sheet	AppData.pdf	967595 a7ac0891fc8a78cf164d559853b1b14d55815a7b	no	5
Warnings:					
Information:					
2		WO2008156412.pdf	742563 75437f0fae0f12944c07ff5d1d4aa6b6c7dbb63c	yes	19
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Abstract		1	2	
	Specification		3	9	
	Claims		10	13	
	Drawings-only black and white line drawings		14	19	
Warnings:					
Information:					
3	Documents submitted with 371 Applications	IPRP.pdf	334208 56b2617f257bdb581f170125ed7f8bac5dc73c68	no	8
Warnings:					
Information:					
4	Oath or Declaration filed	Declaration.pdf	64791 52fd2784058eb41847416070f2fc61be811f3172	no	1
Warnings:					
Information:					
5	Preliminary Amendment	PrelimAmendment.pdf	440853 e431066003c438c76b7b5a19718a1be8ff9f5ac0	no	6
Warnings:					
Information:					
6	Information Disclosure Statement (IDS) Filed (SB/08)	IDS.pdf	608383 d48a4b42d91554b24c182d672b7f74abadb969ae	no	4
Warnings:					
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7	Foreign Reference	EP1799003.pdf	1555234 a88839e2daee8f0627605fd7a8682946b1f249ed	no	31
Warnings:					
Information:					
8	Foreign Reference	WO2007052917.pdf	1438740 f978845e038dba3b3d507e6071c274e553f127bd	no	27
Warnings:					
Information:					
9	NPL Documents	R2-071912.pdf	66539 e20bfd7ac47c7d69e527936a971e4f0cc44bd301	no	6
Warnings:					
Information:					
10	NPL Documents	R2-072205.pdf	129403 03fabb4320b182ea775f4d37a5af89f5e801a3d3	no	8
Warnings:					
Information:					
11	NPL Documents	R2-072543.pdf	69705 016d83f7e06e95a0e927dc9de20514111736a35d	no	4
Warnings:					
Information:					
12	NPL Documents	R2-075559.pdf	58304 d66ec6774c8c59e056eba22a7200a9aac6038448	no	4
Warnings:					
Information:					
13	Fee Worksheet (PTO-875)	fee-info.pdf	37872 87913caade32e00c63c00a2ef456aef49d851c33	no	2
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			Total Files Size (in bytes):	6514190	

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	4015-6727 / P24241-US2
	Application Number	
Title of Invention	Transmission of System Information on a Downlink Shared Channel	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
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Applicant Information:

Applicant 1 Remove

Applicant Authority ◉ Inventor ○ Legal Representative under 35 U.S.C. 117 ○ Party of Interest under 35 U.S.C. 118

Prefix	Given Name	Middle Name	Family Name	Suffix
	Erik		Dahlman	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Bromma	Country Of Residence[i]	SE
Citizenship under 37 CFR 1.41(b)[i]	SE		

Mailing Address of Applicant:

Address 1	Tackjarnsvagen 12		
Address 2			
City	Bromma	State/Province	
Postal Code	SE-168 68	Country[i]	SE

Applicant 2 Remove

Applicant Authority ◉ Inventor ○ Legal Representative under 35 U.S.C. 117 ○ Party of Interest under 35 U.S.C. 118

Prefix	Given Name	Middle Name	Family Name	Suffix
	Vera		Vukajlovic	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Stockholm	Country Of Residence[i]	SE
Citizenship under 37 CFR 1.41(b)[i]	SE		

Mailing Address of Applicant:

Address 1	Frejgatan 45		
Address 2			
City	Stockholm	State/Province	
Postal Code	SE-113 49	Country[i]	SE

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	4015-6727 / P24241-US2
	Application Number	
Title of Invention	Transmission of System Information on a Downlink Shared Channel	

Customer Number	24112		
Email Address	mmurphy@coatsandbennett.com	Add Email	Remove Email
Email Address	lwade@coatsandbennett.com	Add Email	Remove Email

Application Information:

Title of the Invention	Transmission of System Information on a Downlink Shared Channel		
Attorney Docket Number	4015-6727 / P24241-US2	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		**Sub Class (if any)**	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)		**Suggested Figure for Publication (if any)**	

Publication Information:

☐	Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐	**Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S. C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

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Customer Number	24112		

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This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	a 371 of international	PCT/SE2008/050407	2008-04-10
Prior Application Status	Expired		Remove

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	4015-6727 / P24241-US2
	Application Number	
Title of Invention	Transmission of System Information on a Downlink Shared Channel	

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
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Title of Invention	Transmission of System Information on a Downlink Shared Channel	

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(54) Title: TRANSMISSION OF SYSTEM INFORMATION

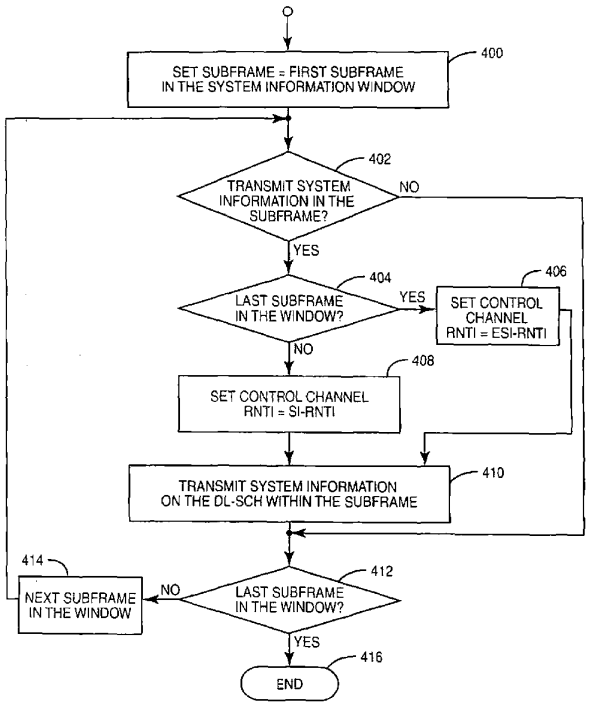

FIG. 4

(57) Abstract: In one embodiment, a method of transmitting system information on a down link shared channel structured as successive subframes includes transmitting (400 - 416) system information in regularly occurring time windows, each time window spanning some number of successive subframes. The method further includes indicating (406 / 408) to receiving user equipment (120) which subframes within a given time window carry system information. The method and variations of it are applied, for example, to the transmission of dynamic system information on the down link shared channel or other down link channel in a 3GPP E-UTRA wireless communication network (100).

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TRANSMISSION OF SYSTEM INFORMATION

BACKGROUND

Technical Field

The present invention generally relates to wireless communication networks, and particularly relates to the transmission of system information to user equipment (UE) operating in such networks, such as the transmission of system information by radio base stations in a wireless communication network configured according to 3GPP E-UTRA (evolved Universal Terrestrial Radio Access) standards, also referred to as 3GPP LTE (Long Term Evolution).

Background

In the 3GPP LTE, downlink user-data transmission is carried out on the Downlink Shared Channel (DL-SCH) transport channel. In LTE, the time dimension is divided into radio frames of length 10 ms, where each radio frame consists of 10 subframes, each of length 1 ms corresponding to 14 OFDM (orthogonal frequency-division multiplexing) symbols. Each subframe consists of two slots, each of length 0.5 ms or seven OFDM symbols. Note that, in case of Time Division Duplex (TDD), only a subset of the subframes of one frame is available for downlink transmission. On the other hand, in case of Frequency Division Duplex (FDD), all subframes on a downlink carrier are available for downlink transmission.

In LTE, the overall time/frequency-domain physical resource is divided into resource blocks, where each resource block consists of twelve OFDM subcarriers during one slot. DL-SCH transmission to a UE is carried out using a set of such resource blocks during one subframe. Layer 1 / Layer 2 (L1/L2) control signaling, also known as the Physical Downlink Control Channel (PDCCH), is transmitted at the beginning of each subframe. The L1/L2 control channel is typically used to inform a UE about various items. For example, the L1/L2 control channel may identify whether the DL-SCH carries data to the UE in the given subframe. More specifically, the L1/L2 control channel then includes the RNTI (Radio Network Temporary Identifier) associated with the UE for which the DL-SCH carries data in the given subframe. The L1/L2 control channel then also identifies the physical resource, more specifically the specific set of resource blocks that is used for the DL-SCH transmission to the specific UE in the given subframe. Moreover, the L1/L2 control channel then identifies the transport format (e.g. the modulation scheme and coding rate) used for DL-SCH transmission to the specific UE in the given subframe. Separate DL-SCH transmissions, using different physical resources (different resource blocks), can be carried out to different UEs during the same subframe. In this case there are multiple L1/L2 control channels, one for each UE that is to receive DL-SCH transmission in the given subframe.

In addition to user data, system information is also transmitted on the downlink within each cell. The system information may, e.g., include: public Land Mobile Network (PLMN) identity/identities, identifying the operator(s) to which the cell "belongs"; Neighbor-cell list, i.e. a list

of the cells that are neighbors to the current cell; and different parameters used by the user terminal when accessing the system, e.g. random-access parameters and cell-access restrictions. The system information can be divided into two parts, one part being fixed and the other part being dynamic. The fixed part of the system information is transmitted on a pre-determined physical resource, i.e. a specific set of OFDM subcarriers during a specific time interval, using a pre-determined transport format. There is thus no flexibility in the amount of information in the fixed part of the system information. There is also no flexibility in the transmission structure (the physical resource and the transport format) used for the fixed part of the system information. In LTE, the fixed part of the system information is transmitted using the BCH (broadcast control channel) transport channel. Furthermore, for LTE it is currently assumed that the BCH is transmitted in the six centre resource blocks in subframe #0 of each frame.

The dynamic part of the system information is assumed to be transmitted using the DL-SCH, or at least a DL-SCH-like transport channel, similar to normal data transmission as described above. New UEs continuously "enter" the cell, either entering from a neighbor cell, due to power-on, or upon return from out-out-service, and the UEs must quickly acquire the system information. Thus the system information (both the fixed part on the BCH and the dynamic part on the DL-SCH or a DL-SCH-like channel) should be repeated regularly.

As an example, in LTE the fixed part of the system information (transmitted using the BCH) is assumed to be repeated every 40 ms. Also the dynamic part of the system information should be repeated more or less regularly. However, different portions of the dynamic part of the system information are more or less time critical, in the sense of how quickly the UE must acquire it, and thus need to be repeated more or less often. This can be described so that the dynamic part of the system information is divided into different so-called scheduling units, also referred to as System Information Messages. In general, information corresponding to scheduling unit number n should be repeated more often than information corresponding to scheduling unit number n+1. As an example, scheduling unit #1 (SU-1) may be repeated (approximately) once every 80 ms, scheduling unit #2 (SU-2) may be repeated (approximately) once every 160 ms, scheduling unit #3 (SU-3) may be repeated (approximately) once every 320 ms, etc.

SUMMARY

The invention described below allows for transmission of the dynamic part of the system information fulfilling these requirements and desirable properties while, at the same time, allowing for low UE complexity. One aspect of the teachings presented herein is to transmit system information in regularly occurring (system information) windows, with specific RNTIs indicating the presence of system information in a subframe, and with another specific RNTI indicating the end of system information transmission. This enables UEs to stop receiving, demodulating and decoding subframes when no more system information is expected during the current window.

In one embodiment, a method of transmitting system information on a downlink shared channel structured as successive subframes includes transmitting system information in regularly occurring time windows, each time window spanning some number of successive subframes. The method further includes indicating to receiving user equipment which subframes within a given time window carry system information.

Of course, the present invention is not limited to the above features and advantages. Indeed, those skilled in the art will recognize additional features and advantages upon reading the following detailed description, and upon viewing the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram of an embodiment of a wireless network that overlays or otherwise defines a recurring sequence of time windows for the transmission of dynamic system information using subframes falling within the defined time windows.

Figure 2 is a diagram of an embodiment of different system-information time windows having different repetition periods.

Figure 3 is a diagram of an embodiment of overlaying or otherwise defining a recurring sequence of time windows for the transmission of dynamic system information using subframes falling within the defined time windows.

Figure 4 is a flow diagram of an embodiment of program logic for overlaying or otherwise defining a recurring sequence of time windows for the transmission of dynamic system information using subframes falling within the defined time windows.

Figure 5 is a flow diagram of an embodiment of program logic for processing recurring system-information time windows containing dynamic system information included in subframes falling within the defined time windows.

Figure 6 is a diagram of an embodiment of variably sized recurring system-information time windows for the transmission of system information.

Figure 7 is a diagram of an embodiment of different system-information time windows.

DETAILED DESCRIPTION

Figure 1 illustrates an embodiment of a wireless network 100 including one or more network transmitters 110 such as a radio base station which services one or more UEs 120. The network transmitter 110 includes a baseband processor 130 for generating one or more scheduling units 132 (also referred to as System Information Messages) including dynamic parts of the system information. The network transmitter 110 sends the scheduling units 132 to the UE 120 using different system-information windows. In one embodiment, the system-information windows occur with a period corresponding to the repetition period of the most frequently occurring scheduling unit 132 as shown in Figure 2 where "SU-n" refers to the nth scheduling unit 132. System

information corresponding to the most frequently occurring scheduling unit 132 is transmitted within each system-information window while less frequently-occurring scheduling units 132 are transmitted only within a sub-set of the system-information windows, where system information is shown as a shaded area in Figure 2. For illustrative purposes only, system information corresponding to a second one of the scheduling units 132 could be transmitted within every second window, system information corresponding to a third one of the scheduling units 132 could be transmitted within every fourth window, and so on.

In one embodiment, the transmission timing corresponding to each scheduling unit 132 can be pre-specified when a limited amount of transmission periods are employed by the network 100. In another embodiment, the window transmission timing can be signaled to the UE 120, e.g. when more specific values for transmitted scheduling units 132 are specified. Either way, a variable window size can be used if the amount of system information is not the same in each window. In one embodiment, the window size is increased when system information from additional scheduling units 132 is transmitted.

Figure 3 illustrates one embodiment of transmitting the dynamic (possibly changing) system information within regularly occurring windows with well-defined starting points (specific subframes) and of a certain size in number of (consecutive) subframes. In the illustration, the system-information windows, more generally regarded as recurring time windows defined for the transmission of system information, start at subframe #5 of the frame with frame number 8*k and have a size of 13 subframes. The network transmitter 110 only transmits the dynamic part of the system information within these windows. Moreover, the window occurs (is repeated) often enough to fulfill the repetition rate of the most often repeated system information (in LTE terminology, system information corresponding to the first scheduling unit 132, as described above).

In one or more embodiments, within each recurring time window, the transmission of system information is carried out similar to the transmission of user data on DL-SCH (dynamic resource and transport format with signaling on L1/L2 control channel), with some exceptions. Instead of using an RNTI of a specific UE 120, a specific System-Information RNTI (SI-RNTI), indicating that system information to be read by all UEs 120 is being transmitted, is included in the corresponding L1/L2 control signaling. Also, for the last piece of system information to be transmitted within the window, the SI-RNTI is replaced with an End-of-System-Information RNTI (ESI-RNTI). The reception of an ESI-RNTI informs the UE 120 that no more system information is transmitted within the window. The UE 120 can stop demodulating and decoding the L1/L2 control channel when there is no more system information to be transmitted in the window, thus improving UE power-saving performance.

Moreover, the system information does not have to be transmitted in consecutive subframes. This way, the network transmitter 110 can dynamically avoid transmitting system

information in certain subframes when a more pressing need for subframes arises, e.g., when a subframe is needed for high priority downlink data transmission or for uplink transmission in case of TDD. In addition, the set of subframes in which system information is actually transmitted does not have to be the same between consecutive windows. Furthermore, the network transmitter 110 can dynamically vary the number of subframes used to carry system information without prior knowledge of the UE 120 (i.e., prior to the UE 120 reading the L1/L2 control channel).

As non-limiting examples, the teachings presented herein for transmitting system information yields several desirable properties. For example, there are several requirements and desired properties for the transmission of the dynamic part of the system information. From a UE power-consumption point of-view, it is desirable to transmit the different parts of the system information as close in time as possible to each other, in the ideal case in a set of consecutive subframes. This enables the UE 120 to receive the maximum amount of system information during a minimum reception time, reducing UE reception time and UE power consumption.

The teachings herein also allow system information to be transmitted in recurring time windows, where the particular subframes within each window used for carrying system information are selectable. If current conditions, e.g., competing transmission priorities permit, the system information can be transmitted in a contiguous set of subframes within the time window.

It is also desirable to have flexibility in terms of exactly where the system information is transmitted, i.e., exactly which set of subframes within a given time window carries the system information. Some subframes, depending on the situation, may not be available for transmitting system information. For example, some TDD subframes may not be available for downlink transmission. In another example, for latency reasons there may, in some situations, be a benefit to not having too many consecutive subframes used for transmission of system information, thus making them unavailable for downlink user data transmission. As such, it is also desirable to dynamically (with low delay) decide in exactly what subframes the system information is to be transmitted.

Further, it is desirable to have flexibility in the rate by which different parts of the system information is repeated. In this way, a higher repetition rate (shorter repetition period) can be used, e.g. in the case of wider overall transmission bandwidth, when the overhead of the system-information transmission is less of a concern. It is desirable to have flexibility in the number of subframes used to transmit the system information. As an example, in case of smaller overall bandwidth or larger cells, more subframes may be needed to transmit a given set of system information. Moreover, the amount of system information, e.g. neighbor lists and PLMN lists may be of different sizes for different cells.

The teachings presented herein provide for methods and apparatuses where system information is transmitted within recurring time windows, but with flexible selection of which subframes within those windows are used to carry system information. Figure 4 illustrates one

embodiment of program logic for transmitting system information from the network transmitter 110 to the UE 120. According to this embodiment, the baseband processor 130 included in the network transmitter 110 initializes the first subframe in the system-information window (Step 400). The baseband processor 130 then determines whether the current subframe is to be used for transmission of system information (Step 402). If so, the baseband processor 130 determines whether the current subframe is the last subframe in the window (Step 404). If the current subframe is the last subframe, the RNTI of the L1/L2 control channel is set to ESI-RNTI for indicating to the UE 120 that the subframe is the last subframe in the window containing system information. (Step 406). Otherwise, the control channel RNTI is set to SI-RNTI for indicating to the UE 120 that the subframe contains system information, but is not the last subframe. (Step 408). The corresponding system information is transmitted on the DL-SCH within the current subframe (Step 410). The baseband processor 130 determines whether the last window subframe has been transmitted (Step 412). If not, Steps 402 – 412 are repeated for the next subframe within the window. The system information transmission process ends when the last subframe is transmitted (Step 416).

Figure 5 illustrates one embodiment of program logic carried out by the UE 120 for processing the system information transmitted by the network transmitter 110. According to this embodiment, the UE 120 includes a baseband processor 140 for demodulating and decoding received subframes. A window detection and evaluation unit 150 included in or associated with the baseband processor 140 begins the window reception process by initializing the first subframe received within the window (Step 500). The baseband processor 150 then demodulates and decodes the L1/L2 control channel of the current subframe (Step 502). The window detection and evaluation unit 150 determines whether either SI-RNTI or ESI-RNTI is detected for the current subframe (Step 504). If so, the baseband processor 140 demodulates and decodes the corresponding DL-SCH transport block to retrieve the system information provided therewith (Step 506). The window detection and evaluation unit 150 then determines whether the current subframe is the last subframe in the window or the last subframe containing system information, e.g., whether the RNTI of the control channel is ESI-RNTI (Step 508). If neither condition exists, Steps 502 – 508 are repeated for the next subframe within the window (Step 510). The baseband processor 140 stops demodulating and decoding DL-SCH transport blocks when either the last subframe or ESI-RNTI is detected, indicating no more system information is forthcoming (Step 512). Thus, the UE 120 demodulates and decodes the control channel starting with the first subframe in the system information window and checks for specific system information RNTIs until either the ESI-RNTI is detected or the last window subframe is received.

As discussed above, some parts of the system information (corresponding to the scheduling units 132) may not need to be repeated as often as some other parts of the system information, implying that certain windows will include more data (more scheduling units 132) than

other windows. Thus, the window size may be of varying length, with a longer window at the time instances where more system information (more scheduling units 132) is to be transmitted. Figure 6 provides an illustration of a variable-length window embodiment.

Note that the window size can be specified in either the radio-access specification or be configurable. In case of a configurable window size, the UE 120 can use a default (large) window size before it is informed (via the system information) about the actual window size. Moreover, the RNTI may indicate more than just system information such as more details about the system information. In one embodiment, several different SI-RNTIs could be used, e.g., SI-RNTI1, SI-RNTI2, SI-RNTI3, ..., with corresponding multiple ESI-RNTIs, e.g., ESI-RNTI1, ESI-RNTI2, ESI-RNTI3, etc.

In one embodiment, the scheduling units 132 transmitted at the same time use the same system-information window as shown in the upper part of Figure 7. Alternatively, the scheduling units 132 are transmitted using different system-information windows as shown in the lower part of Figure 7. In either embodiment, system information is transmitted in regularly occurring system-information windows, with specific RNTIs indicating the presence of system information in a subframe, and with another specific RNTI indicating the end of system information transmission.

Of course, other variations are contemplated. Thus, the foregoing description and the accompanying drawings represent non-limiting examples of the methods and apparatus taught herein for the transmission of system information. As such, the present invention is not limited by the foregoing description and accompanying drawings. Instead, the present invention is limited only by the following claims and their legal equivalents.

CLAIMS

What is claimed is:

1. A method of transmitting system information on the downlink of a wireless communication network comprising:

transmitting (410) system information in recurring time windows overlaid on a sequence of transmit channel subframes;

dynamically selecting (402) which subframes within a given time window are to be used for carrying the system information; and

including (406 / 408) an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

2. The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a contiguous set of subframes within the given time window.

3. The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a non-contiguous set of subframes within the given time window.

4. The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting which subframes to use for transmitting system information in view of competing transmission priorities associated with other control or data signaling.

5. The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information comprises using an RNTI (Radio Network Temporary Identifier) to denote that the subframe carries system information.

6. The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using an end-of-system-information indicator in a last subframe of the given time window that carries system information.

7. The method of claim 1, further comprising varying window sizes of the recurring time windows.

8. The method of claim 1, further comprising dynamically configuring a window size for the recurring time windows.

9. The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using different indicators corresponding to different types of system information, such that the indicator used for a particular subframe indicates the type of system information carried in that subframe.

10. A network transmitter (110) comprising a baseband processor (130) configured to:

generate system information in recurring time windows overlaid on a sequence of transmit channel subframes;

dynamically select which subframes within a given time window are to be used for carrying system information; and

include an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

11. The network transmitter of claim 10, wherein the network transmitter comprises a radio base station configured for operation in accordance with 3GPP E-UTRA standards.

12. A method of transmitting system information on a downlink shared channel structured as successive subframes, the method comprising:

transmitting (400 – 416) system information in regularly occurring time windows, each time window spanning some number of successive subframes; and

indicating (406 / 408) to receiving user equipment which subframes within a given time window carry system information.

13. The method of claim 12, wherein indicating to receiving user equipment which subframes within a given time window carry system information includes indicating the last subframe within the given time window that carries system information, thereby allowing the receiving user equipment to cease monitoring for system information within the given time window.

14. The method of claim 12, further comprising dynamically selecting which subframes within a given time window are to be used for carrying system information.

15. A method for a mobile station to receive system information from a supporting wireless communication network, the method comprising:

beginning monitoring (500 and 502) for the receipt of system information at the start of each time window in a succession of recurring time windows used for the transmission of system information, each said time window spanning a number of signal subframes;

within each time window, monitoring (504 – 510) each signal subframe for an indication of system information and reading system information from the signal subframe if such information is present; and

terminating monitoring (512) at least at the end of the time window.

16. The method of claim 15, further comprising recognizing an end-of-system-information indicator in a signal subframe received within the time window and terminating monitoring for the time window in response.

17. The method of claim 15, further comprising adapting to changing or configurable window sizes used for the time window.

18. The method of claim 15, further comprising storing a default window size for monitoring for system information transmissions.

19. The method of claim 18, further comprising monitoring for system information transmissions based on a specified window size indicated in received information rather than the default window size.

20. The method of claim 15, further comprising recognizing different types of system information based on recognizing different system information indicators in different signal subframes.

21. A mobile station (120) comprising a baseband processor (140) operable to:

begin monitoring for the receipt of system information at the start of each time window in a succession of recurring time windows used for the transmission of system information, each said time window spanning a number of signal subframes;

within each time window, monitor each signal subframe for an indication of system information and reading system information from the signal subframe if such information is present; and

terminate monitoring at least at the end of the time window.

22. The mobile station of claim 21, wherein the baseband processor is operable to recognize an end-of-system-information indicator in a signal subframe received within the time window and terminate monitoring for the time window in response.

23. The mobile station of claim 21, wherein the baseband processor is operable to adapt to changing or configurable window sizes used for the time window.

24. The mobile station of claim 21, wherein the baseband processor is operable to monitor for system information transmissions based on a specified window size indicated in received information rather than a default window size.

25. The mobile station of claim 21, wherein the baseband processor is operable to recognize different types of system information based on different system information indicators detected in different signal subframes.

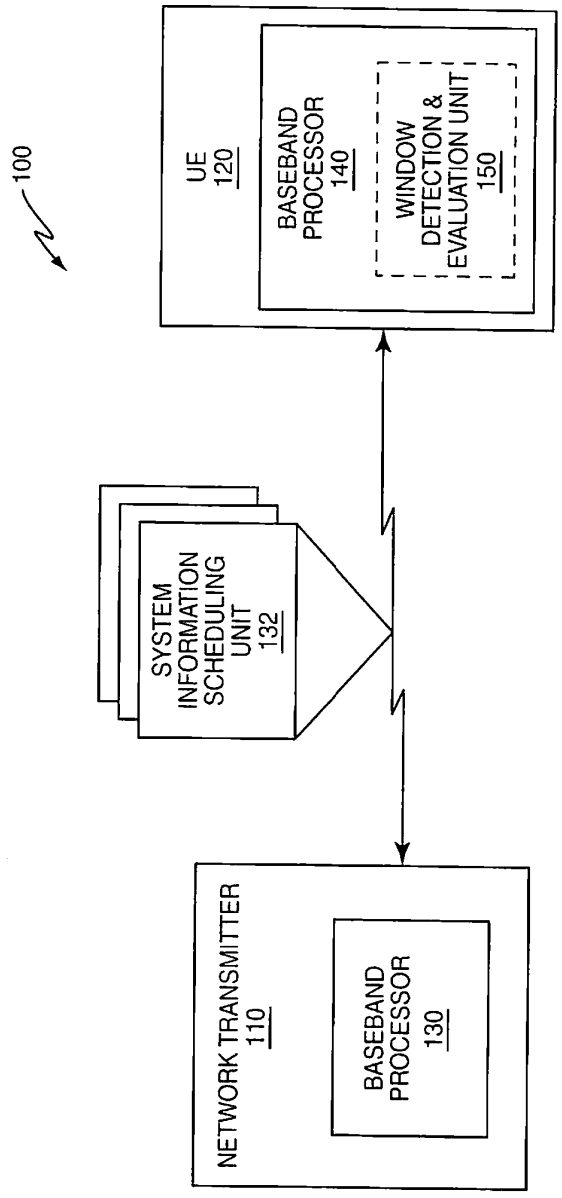
100
UE
120
BASEBAND
PROCESSOR
140
WINDOW
DETECTION &
EVALUATION UNIT
150
SYSTEM
INFORMATION
SCHEDULING
UNIT
132
NETWORK TRANSMITTER
110
BASEBAND
PROCESSOR
130

FIG. 1

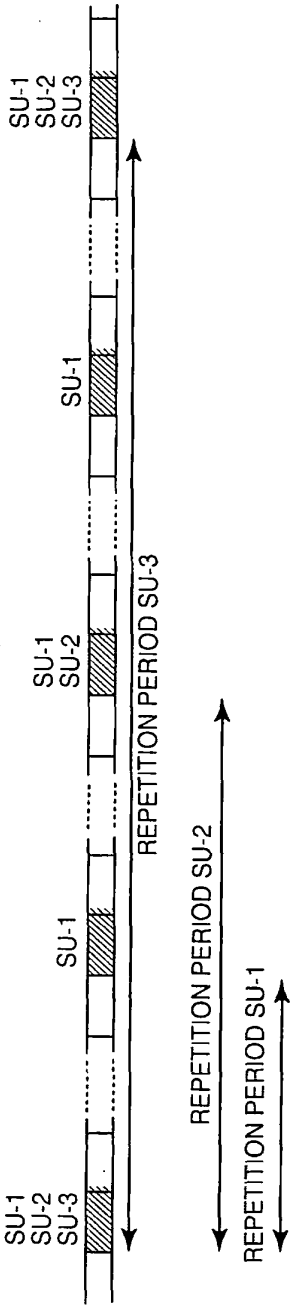
SU-1
SU-2
SU-3
SU-1
SU-1
SU-2
SU-3
SU-1
SU-2
SU-3
REPETITION PERIOD SU-3
REPETITION PERIOD SU-2
REPETITION PERIOD SU-1

FIG. 2

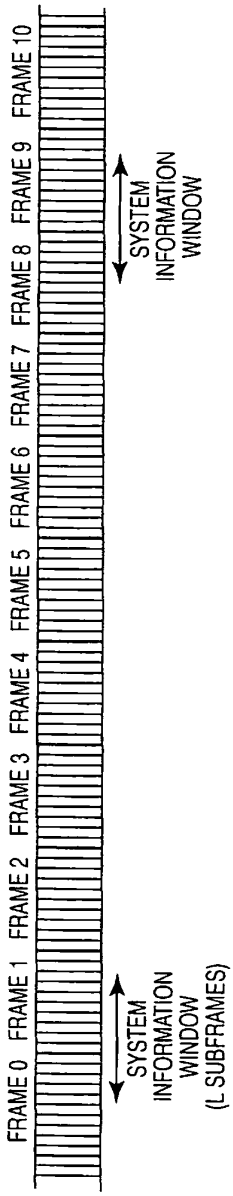
FRAME 0
FRAME 1
FRAME 2
FRAME 3
FRAME 4
FRAME 5
FRAME 6
FRAME 7
FRAME 8
FRAME 9
FRAME 10
SYSTEM INFORMATION WINDOW
SYSTEM INFORMATION WINDOW (L SUBFRAMES)

FIG. 3

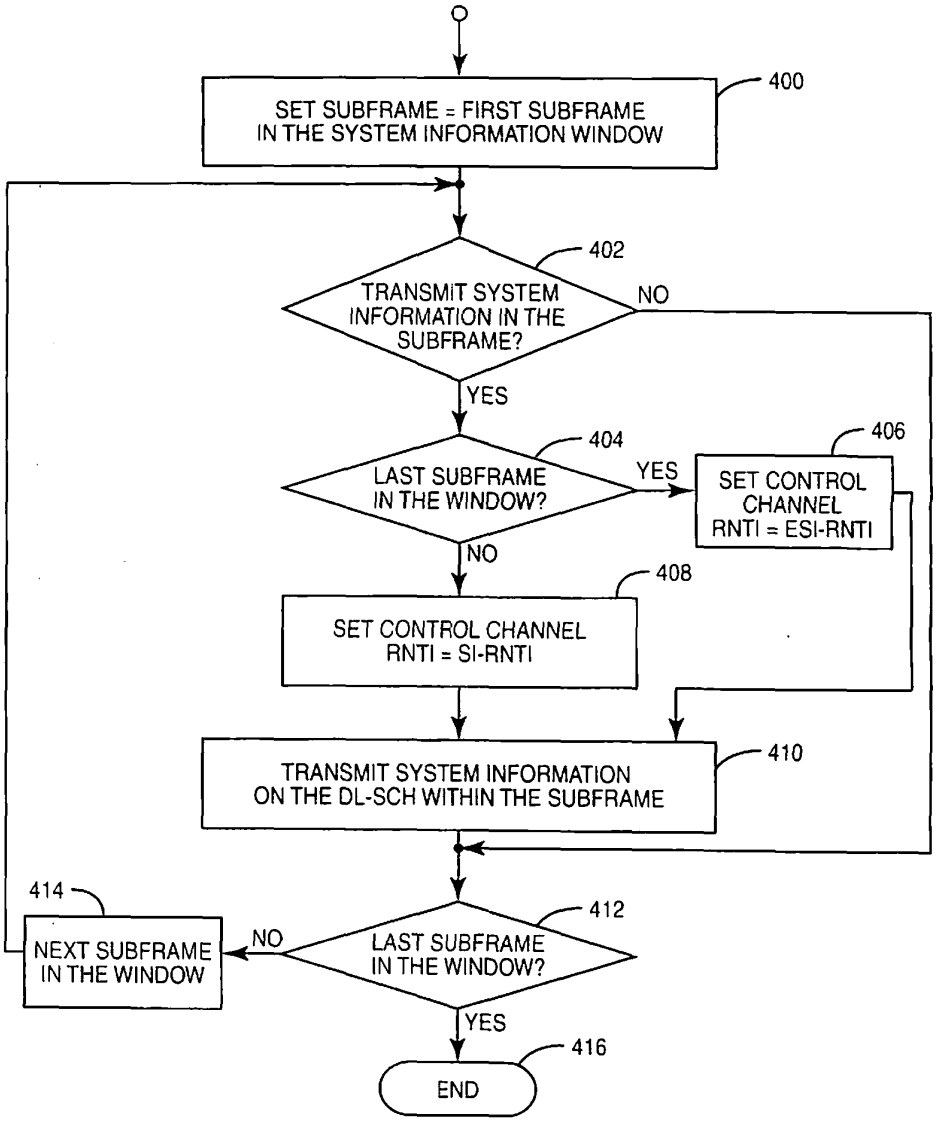
SET SUBFRAME = FIRST SUBFRAME IN THE SYSTEM INFORMATION WINDOW
400
TRANSMIT SYSTEM INFORMATION IN THE SUBFRAME?
402
NO
YES
LAST SUBFRAME IN THE WINDOW?
404
YES
SET CONTROL CHANNEL RNTI = ESI-RNTI
406
NO
SET CONTROL CHANNEL RNTI = SI-RNTI
408
TRANSMIT SYSTEM INFORMATION ON THE DL-SCH WITHIN THE SUBFRAME
410
LAST SUBFRAME IN THE WINDOW?
412
NO
NEXT SUBFRAME IN THE WINDOW
414
YES
END
416

FIG. 4

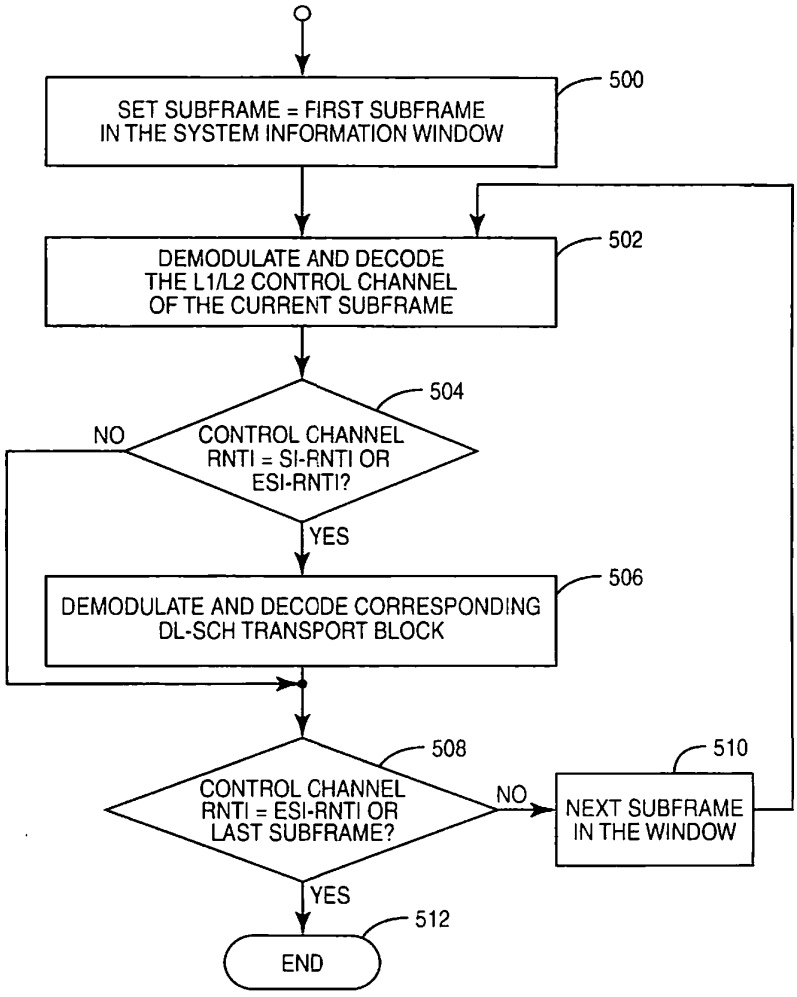
SET SUBFRAME = FIRST SUBFRAME IN THE SYSTEM INFORMATION WINDOW
500
DEMODULATE AND DECODE THE L1/L2 CONTROL CHANNEL OF THE CURRENT SUBFRAME
502
CONTROL CHANNEL RNTI = SI-RNTI OR ESI-RNTI?
504
NO
YES
DEMODULATE AND DECODE CORRESPONDING DL-SCH TRANSPORT BLOCK
506
CONTROL CHANNEL RNTI = ESI-RNTI OR LAST SUBFRAME?
508
NO
NEXT SUBFRAME IN THE WINDOW
510
YES
END
512

FIG. 5

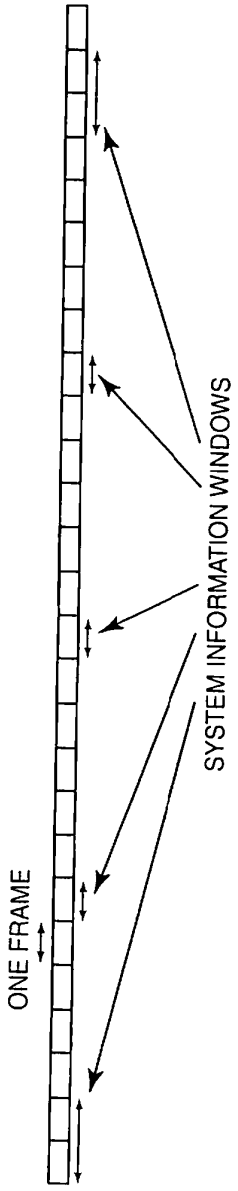

FIG. 6

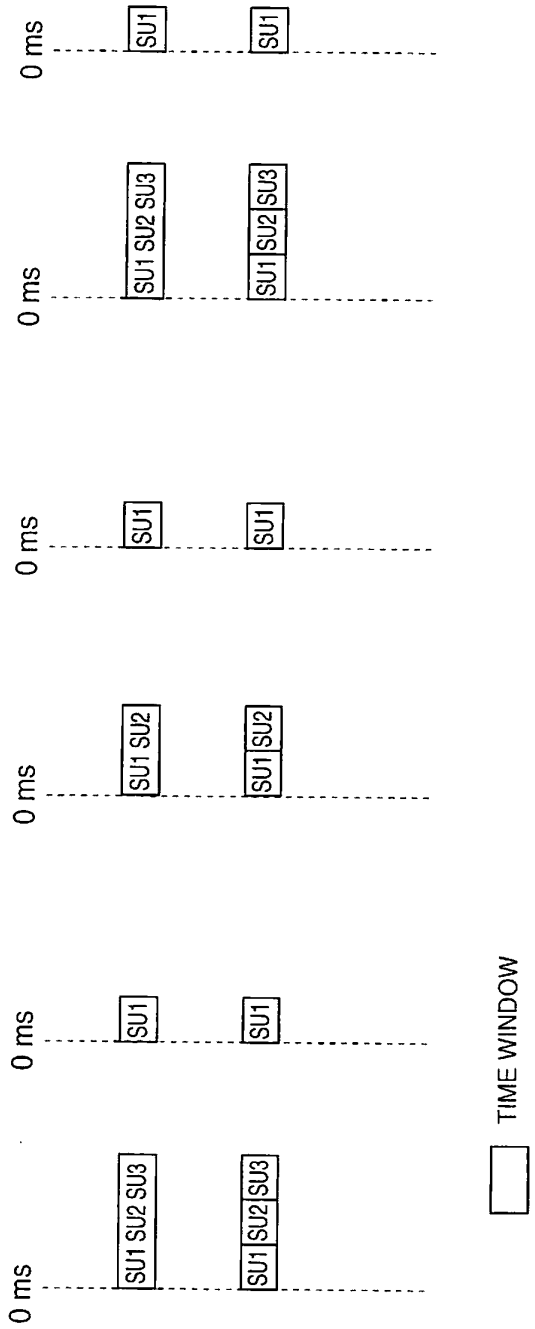
0 ms
SU1
SU1
0 ms
SU1 SU2 SU3
SU1 SU2 SU3
0 ms
SU1
SU1
0 ms
SU1 SU2
SU1 SU2
0 ms
SU1
SU1
0 ms
SU1 SU2 SU3
SU1 SU2 SU3
TIME WINDOW

FIG. 7

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P24241WO1	**FOR FURTHER ACTION** See Form PCT/IPEA/416	
International application No. PCT/SE2008/050407	International filing date *(day/month/year)* 10-04-2008	Priority date *(day/month/year)* 18-06-2007
International Patent Classification (IPC) or national classification and IPC See Supplemental Box		
Applicant TELEFONAKTIEBOLAGET LM ERICSSON (PUBL) et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 8 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☐ *(sent to the applicant and to the International Bureau)* a total of _____ sheets, as follows:
      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s))
      _____ , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items:
   - ☒ Box No. I Basis of the report
   - ☐ Box No. II Priority
   - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - ☐ Box No. IV Lack of unity of invention
   - ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - ☐ Box No. VI Certain documents cited
   - ☐ Box No. VII Certain defects in the international application
   - ☒ Box No. VIII Certain observations on the international application

Date of submission of the demand	Date of completion of this report
16-04-2009	22-09-2009
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer Anders Ackeberg / EÖ Telephone No. +46 8 782 25 00

Form PCT/IPEA/409 (cover sheet) (January 2009)

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: Cover sheet

International patent classification (IPC)
H04J 3/00 (2006.01)
H04B 7/26 (2006.01)
H04W 68/00 (2009.01)
H04W 74/04 (2009.01)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/SE2008/050407

Box No. I Basis of the report

1. With regard to the **language**, this report is based on:
   - ☒ the international application in the language in which it was filed.
   - ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of:
     - ☐ international search (Rules 12.3(a) and 23.1(b)).
     - ☐ publication of the international application (Rule 12.4(a)).
     - ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a)).

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
   - ☒ the international application as originally filed/furnished.
   - ☐ the description:
     - pages _____ as originally filed/furnished.
     - pages* _____ received by this Authority on _____
     - pages* _____ received by this Authority on _____
   - ☐ the claims:
     - pages _____ as originally filed/furnished.
     - pages* _____ as amended (together with any statement) under Article 19
     - pages* _____ received by this Authority on _____
     - pages* _____ received by this Authority on _____
   - ☐ the drawings:
     - pages _____ as originally filed/furnished.
     - pages* _____ received by this Authority on _____
     - pages* _____ received by this Authority on _____
   - ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:
   - ☐ the description, pages _____
   - ☐ the claims, Nos. _____
   - ☐ the drawings, sheets/figs _____
   - ☐ the sequence listing *(specify)*: _____
   - ☐ any table(s) related to the sequence listing *(specify)*: _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   - ☐ the description, pages _____
   - ☐ the claims, Nos. _____
   - ☐ the drawings, sheets/figs _____
   - ☐ the sequence listing *(specify)*: _____
   - ☐ any table(s) related to the sequence listing *(specify)*: _____

5. ☐ This report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 70.2(c)).

6. ☐ Supplementary international search report(s) from Authority(ies) _____ have been received and taken into account in drawing up this report (Rule 45*bis*.8(b) and (c)).

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

Form PCT/IPEA/409 (Box No. I) (January 2009)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/SE2008/050407

Box No. V **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-25	YES
	Claims	----	NO
Inventive step (IS)	Claims	1-11, 13-25	YES
	Claims	12	NO
Industrial applicability (IA)	Claims	1-25	YES
	Claims	----	NO

2. Citations and explanations (Rule 70.7)

The claimed invention

The claimed invention concerns a method for transmitting system information.
In LTE, system information can be divided in two parts, a fixed part sent on BCH and a dynamic part sent on the DL-SCH. Different portions of the dynamic part of the system information need to be repeated more or less often.

The claimed invention solves this problem by transmitting control information in recurring time windows and indicating to the receiving UE which subframes that are dynamically selected to carry control information.

Cited documents:

D1: "Draft text proposal capturing agreements on system Information"
R2-072205
3GPP TSG-RAN2 Meeting #58
Kobe, Japan, 7th-11th May 2007

D2: "System information scheduling and change notification"
R2-071912
3GPP TSG-RAN2 Meeting #58
Kobe, Japan, 7th-11th May 2007

D3: 3GPP TS36.300 V8.0.0 (2007-03)

D4: WO 2007052917 A1
D5: EP 1799003 A1

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: Box V

D1, which is considered to represent the most relevant prior art, describes transmission of system information in LTE. See the whole document.

D2, which is also considered to be a relevant document, describes system information scheduling. See the whole document.

D3, which is a background art document, is the 3Gpp specification for E-UTRA and E-UTRAN, overall description. See pages 36 and 72-74.

D4 is a background art document. According to D4, in the related art, it can be said that the system information is always fixed or non- flexible. Such fixed format allows a mobile terminal to easily detect and properly read the system information transmitted from the network. In contrast, the features of the invention in D4 allow at least some portions of the system information to be dynamically (or flexibly) changed. Appropriate indicators are included such that a mobile terminal can properly detect and read the dynamic (flexible) system information. See abstract, sections [3]-[4], [15], [32]-[34] and [44]-[59] and figures 2-3 and 7-8.

D5, which is a background art document, describes mapping of broadcast system information to a shared transport channel. See abstract, sections [0025]-[0026] and [0032]-[0048] and figures 6 and 10-12.

Claim 12

In D1, a group of system information blocks (SIBs) that have the same scheduling requirements are referred to as a Scheduling Unit (SU). The most frequently repeated SU (SU-1) carries scheduling information of the other SUs and indication in which the SU the SIB is included. An SU may furthermore be segmented, in which case segments are scheduled in subsequent consecutive subframes.

To indicate in which the SU the SIB is included is considered to be comparable to indicate which subframes that carries system information.

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: Box V

Hence, the claimed invention differs from D1 in that each subframe includes an indicator to indicate which subframe that carries system information. However, to include an indicator in each subframe, instead of an indicator in SU-1 that indicates which subframes that carries system information, is not considered to go beyond what can be expected from a person skilled in the art. Consequently, claim 12 is considered to fail to involve an inventive step.

Claims 1-11 and 13-25

The invention defined in claims 1-11 and 13-25 is not disclosed by any of these documents.
The cited prior art does not give any indication that would lead a person skilled in the art to the claimed invention of transmitting the system information in recurring time windows, each said time window spanning a
number of signal subframes, and dynamically selecting which sub-frames within a given time window are to be used and including an indicator in each of the selected sub-frames to indicate to receiving User Equipment that the sub-frame carries system information. Therefore, the claimed invention is not obvious to a person skilled in the art.

Accordingly, the invention defined in claims 1-11 and 13-25 is novel and is considered to involve an inventive step. The invention is industrially applicable.

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claims 1, 10, 12, 15 and 21 are not supported by the description as required by Article 6 PCT, as their scope is broader than justified by the description and drawings. The technical feature "downlink shared channel", included in claim 12, is missing in claims 1, 10, 15 and 21. Furthermore, the feature "dynamically selecting which subframes to be used for carrying the system information", included in claims 1 and 10, is missing in claim 12.
Since independent claims 1, 10, 12, 15 and 21 do not contain the same technical features, they do not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.

Furthermore, claims 1, 10, 15 and 21 do not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. In claims 1 and 10 the expression "recurring time windows overlaid on a sequence of transmit channel subframes" is used. However, in claims 15 and 21 it is stated "recurring time window **used for transmission of system information**". Since different wordings are used, it is unclear if the matter for which protection is sought is equal for claims 1 and 10 as for claims 15 and 21.

The applicant has stated that the feature "downlink shared channel", included in claim 12, not is a technical feature essential to the definition of the invention, since it follows that "in LTE, the **fixed part** of the system information is transmitted using the BCH (broadcast control channel) transport channel" (see page 2). What should also be noted is found on page 2, lines 12-14, where it is stated "**The dynamic part** of the system information is assumed to be transmitted using the DL-SCH, or at least DL-SCH-like transport channel, similar to normal data transmission as described above". The applicant thus claims that transmitting system information on the DL-SCH is merely an alternative.

However, from the description it is obvious that the mentioned system information that is transmitted is **the dynamic part** of the system information (see page 2: lines 20-25 and 31).

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: Box VIII

The claimed invention is said to solve the problem that different portions of **the dynamic part** of the system information are more or less time critical, and thus need to be repeated more or less often. Furthermore, line 31 on page 2 states that "The invention described below allows for transmission of **the dynamic part** of the system information fulfilling these requirements and desirable properties while, at the same time, allowing for low UE complexity.

Hence, since the dynamic part is transmitted using the DL-SCH, the technical feature "downlink shared channel", missing in claims 1, 10, 15 and 21, is considered to be a technical features essential to the definition of the invention.

Furthermore, the applicant has referred to page 5, lines 24-26, in order to show the support in the description for claims 1 and 10. In the same section on that page (on lines 22-24) it is stated that "for latency reasons there may in some situations, be a benefit to not having too many consecutive subframes used for transmission of system information, thus making them unavailable for downlink user data transmission", i.e. the system information and downlink user data **shares** the same resources. This clearly shows that the system information, in claims 1 and 10, is sent on the DL-SCH.

Box No. VIII (iv) DECLARATION: INVENTORSHIP (only for the purposes of the designation of the United States of America)

The declaration must conform to the following standardized wording provided for in Section 214; see Notes to Boxes Nos. VIII, VIII (i) to (v) (in general) and the specific Notes to Box No. VIII (iv). If this Box is not used, this sheet should not be included in the request.

Declaration of inventorship (Rules 4.17(iv) and 51*bis*.1(a)(iv)) for the purposes of the designation of the United States of America:

I hereby declare that I believe I am the original, first and sole (if only one inventor is listed below) or joint (if more than one inventor is listed below) inventor of the subject matter which is claimed and for which a patent is sought.

This declaration is directed to the international application of which it forms a part (if filing declaration with application).

This declaration is directed to international application No. PCT/ SE2008/050407 (if furnishing declaration pursuant to Rule 26*ter*).

I hereby declare that my residence, mailing address, and citizenship are as stated next to my name.

I hereby state that I have reviewed and understand the contents of the above-identified international application, including the claims of said application. I have identified in the request of said application, in compliance with PCT Rule 4.10, any claim to foreign priority, and I have identified below, under the heading "Prior Applications," by application number, country or Member of the World Trade Organization, day, month and year of filing, any application for a patent or inventor's certificate filed in a country other than the United States of America, including any PCT international application designating at least one country other than the United States of America, having a filing date before that of the application on which foreign priority is claimed.

Prior Applications: US 60/944,628

I hereby acknowledge the duty to disclose information that is known by me to be material to patentability as defined by 37 C.F.R. § 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the PCT international filing date of the continuation-in-part application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name: DAHLMAN, Erik

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Inventor's Signature: Date: 2008-07-13
(The signature must be that of the inventor, not that of the agent)

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Mailing Address:

Citizenship: Sweden

Inventor's Signature: Date: 20 May 08
(The signature must be that of the inventor, not that of the agent)

☐ This declaration is continued on the following sheet, "Continuation of Box No. VIII (iv)".

Electronic Acknowledgement Receipt	
EFS ID:	6623170
Application Number:	12664347
International Application Number:	
Confirmation Number:	1464
Title of Invention:	Transmission of System Information on a Downlink Shared Channel
First Named Inventor/Applicant Name:	Erik Dahlman
Customer Number:	24112
Filer:	Michael Murphy/Laura Wade
Filer Authorized By:	Michael Murphy
Attorney Docket Number:	4015-6727 / P24241-US2
Receipt Date:	11-DEC-2009
Filing Date:	
Time Stamp:	18:00:25
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	NPL Documents	3GPP-TS-36-300.pdf	792229 4f6e3fbeca4f2e4fca68ba6d945cc3d9d41b2b3e	no	82

Warnings:
Information:

Total Files Size (in bytes):	792229

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
24 December 2008 (24.12.2008)

PCT

(10) International Publication Number
WO 2008/156412 A2

(51) International Patent Classification:
H04L 1/00 (2006.01) *H04J 3/00* (2006.01)

(21) International Application Number:
PCT/SE2008/050407

(22) International Filing Date: 10 April 2008 (10.04.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/944,628 18 June 2007 (18.06.2007) US

(71) Applicant *(for all designated States except US)*: **TELEFONAKTIEBOLAGET LM ERICSSON (PUBL)** [SE/SE]; S-164 83 Stockholm (SE).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **DAHLMAN, Erik** [SE/SE]; Tackjärnsvägen 12, S-168 68 Bromma (SE). **VUKAJLOVIC, Vera** [SE/SE]; Frejgatan 45, S-113 49 Stockholm (SE).

(74) Agent: **HASSELGREN, Joakim**; Ericsson AB, Patent Unit LTE, S-164 80 Stockholm (SE).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: TRANSMISSION OF SYSTEM INFORMATION

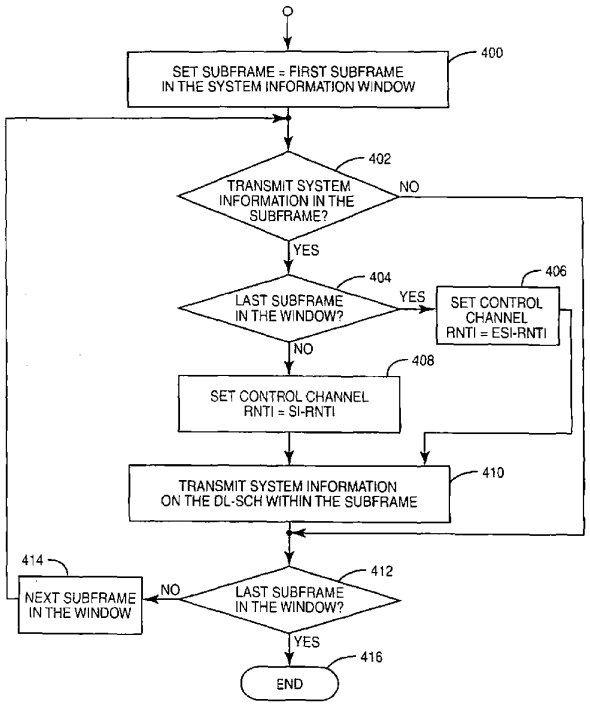

FIG. 4

(57) Abstract: In one embodiment, a method of transmitting system information on a down link shared channel structured as successive subframes includes transmitting (400 - 416) system information in regularly occurring time windows, each time window spanning some number of successive subframes. The method further includes indicating (406 / 408) to receiving user equipment (120) which subframes within a given time window carry system information. The method and variations of it are applied, for example, to the transmission of dynamic system information on the down link shared channel or other down link channel in a 3GPP E-UTRA wireless communication network (100).

WO 2008/156412 A2

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TRANSMISSION OF SYSTEM INFORMATION

BACKGROUND

Technical Field

The present invention generally relates to wireless communication networks, and particularly relates to the transmission of system information to user equipment (UE) operating in such networks, such as the transmission of system information by radio base stations in a wireless communication network configured according to 3GPP E-UTRA (evolved Universal Terrestrial Radio Access) standards, also referred to as 3GPP LTE (Long Term Evolution).

Background

In the 3GPP LTE, downlink user-data transmission is carried out on the Downlink Shared Channel (DL-SCH) transport channel. In LTE, the time dimension is divided into radio frames of length 10 ms, where each radio frame consists of 10 subframes, each of length 1 ms corresponding to 14 OFDM (orthogonal frequency-division multiplexing) symbols. Each subframe consists of two slots, each of length 0.5 ms or seven OFDM symbols. Note that, in case of Time Division Duplex (TDD), only a subset of the subframes of one frame is available for downlink transmission. On the other hand, in case of Frequency Division Duplex (FDD), all subframes on a downlink carrier are available for downlink transmission.

In LTE, the overall time/frequency-domain physical resource is divided into resource blocks, where each resource block consists of twelve OFDM subcarriers during one slot. DL-SCH transmission to a UE is carried out using a set of such resource blocks during one subframe. Layer 1 / Layer 2 (L1/L2) control signaling, also known as the Physical Downlink Control Channel (PDCCH), is transmitted at the beginning of each subframe. The L1/L2 control channel is typically used to inform a UE about various items. For example, the L1/L2 control channel may identify whether the DL-SCH carries data to the UE in the given subframe. More specifically, the L1/L2 control channel then includes the RNTI (Radio Network Temporary Identifier) associated with the UE for which the DL-SCH carries data in the given subframe. The L1/L2 control channel then also identifies the physical resource, more specifically the specific set of resource blocks that is used for the DL-SCH transmission to the specific UE in the given subframe. Moreover, the L1/L2 control channel then identifies the transport format (e.g. the modulation scheme and coding rate) used for DL-SCH transmission to the specific UE in the given subframe. Separate DL-SCH transmissions, using different physical resources (different resource blocks), can be carried out to different UEs during the same subframe. In this case there are multiple L1/L2 control channels, one for each UE that is to receive DL-SCH transmission in the given subframe.

In addition to user data, system information is also transmitted on the downlink within each cell. The system information may, e.g., include: public Land Mobile Network (PLMN) identity/identities, identifying the operator(s) to which the cell "belongs"; Neighbor-cell list, i.e. a list

of the cells that are neighbors to the current cell; and different parameters used by the user terminal when accessing the system, e.g. random-access parameters and cell-access restrictions. The system information can be divided into two parts, one part being fixed and the other part being dynamic. The fixed part of the system information is transmitted on a pre-determined physical resource, i.e. a specific set of OFDM subcarriers during a specific time interval, using a pre-determined transport format. There is thus no flexibility in the amount of information in the fixed part of the system information. There is also no flexibility in the transmission structure (the physical resource and the transport format) used for the fixed part of the system information. In LTE, the fixed part of the system information is transmitted using the BCH (broadcast control channel) transport channel. Furthermore, for LTE it is currently assumed that the BCH is transmitted in the six centre resource blocks in subframe #0 of each frame.

The dynamic part of the system information is assumed to be transmitted using the DL-SCH, or at least a DL-SCH-like transport channel, similar to normal data transmission as described above. New UEs continuously "enter" the cell, either entering from a neighbor cell, due to power-on, or upon return from out-out-service, and the UEs must quickly acquire the system information. Thus the system information (both the fixed part on the BCH and the dynamic part on the DL-SCH or a DL-SCH-like channel) should be repeated regularly.

As an example, in LTE the fixed part of the system information (transmitted using the BCH) is assumed to be repeated every 40 ms. Also the dynamic part of the system information should be repeated more or less regularly. However, different portions of the dynamic part of the system information are more or less time critical, in the sense of how quickly the UE must acquire it, and thus need to be repeated more or less often. This can be described so that the dynamic part of the system information is divided into different so-called scheduling units, also referred to as System Information Messages. In general, information corresponding to scheduling unit number n should be repeated more often than information corresponding to scheduling unit number n+1. As an example, scheduling unit #1 (SU-1) may be repeated (approximately) once every 80 ms, scheduling unit #2 (SU-2) may be repeated (approximately) once every 160 ms, scheduling unit #3 (SU-3) may be repeated (approximately) once every 320 ms, etc.

SUMMARY

The invention described below allows for transmission of the dynamic part of the system information fulfilling these requirements and desirable properties while, at the same time, allowing for low UE complexity. One aspect of the teachings presented herein is to transmit system information in regularly occurring (system information) windows, with specific RNTIs indicating the presence of system information in a subframe, and with another specific RNTI indicating the end of system information transmission. This enables UEs to stop receiving, demodulating and decoding subframes when no more system information is expected during the current window.

In one embodiment, a method of transmitting system information on a downlink shared channel structured as successive subframes includes transmitting system information in regularly occurring time windows, each time window spanning some number of successive subframes. The method further includes indicating to receiving user equipment which subframes within a given time window carry system information.

Of course, the present invention is not limited to the above features and advantages. Indeed, those skilled in the art will recognize additional features and advantages upon reading the following detailed description, and upon viewing the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram of an embodiment of a wireless network that overlays or otherwise defines a recurring sequence of time windows for the transmission of dynamic system information using subframes falling within the defined time windows.

Figure 2 is a diagram of an embodiment of different system-information time windows having different repetition periods.

Figure 3 is a diagram of an embodiment of overlaying or otherwise defining a recurring sequence of time windows for the transmission of dynamic system information using subframes falling within the defined time windows.

Figure 4 is a flow diagram of an embodiment of program logic for overlaying or otherwise defining a recurring sequence of time windows for the transmission of dynamic system information using subframes falling within the defined time windows.

Figure 5 is a flow diagram of an embodiment of program logic for processing recurring system-information time windows containing dynamic system information included in subframes falling within the defined time windows.

Figure 6 is a diagram of an embodiment of variably sized recurring system-information time windows for the transmission of system information.

Figure 7 is a diagram of an embodiment of different system-information time windows.

DETAILED DESCRIPTION

Figure 1 illustrates an embodiment of a wireless network 100 including one or more network transmitters 110 such as a radio base station which services one or more UEs 120. The network transmitter 110 includes a baseband processor 130 for generating one or more scheduling units 132 (also referred to as System Information Messages) including dynamic parts of the system information. The network transmitter 110 sends the scheduling units 132 to the UE 120 using different system-information windows. In one embodiment, the system-information windows occur with a period corresponding to the repetition period of the most frequently occurring scheduling unit 132 as shown in Figure 2 where "SU-n" refers to the nth scheduling unit 132. System

information corresponding to the most frequently occurring scheduling unit 132 is transmitted within each system-information window while less frequently-occurring scheduling units 132 are transmitted only within a sub-set of the system-information windows, where system information is shown as a shaded area in Figure 2. For illustrative purposes only, system information corresponding to a second one of the scheduling units 132 could be transmitted within every second window, system information corresponding to a third one of the scheduling units 132 could be transmitted within every fourth window, and so on.

In one embodiment, the transmission timing corresponding to each scheduling unit 132 can be pre-specified when a limited amount of transmission periods are employed by the network 100. In another embodiment, the window transmission timing can be signaled to the UE 120, e.g. when more specific values for transmitted scheduling units 132 are specified. Either way, a variable window size can be used if the amount of system information is not the same in each window. In one embodiment, the window size is increased when system information from additional scheduling units 132 is transmitted.

Figure 3 illustrates one embodiment of transmitting the dynamic (possibly changing) system information within regularly occurring windows with well-defined starting points (specific subframes) and of a certain size in number of (consecutive) subframes. In the illustration, the system-information windows, more generally regarded as recurring time windows defined for the transmission of system information, start at subframe #5 of the frame with frame number 8*k and have a size of 13 subframes. The network transmitter 110 only transmits the dynamic part of the system information within these windows. Moreover, the window occurs (is repeated) often enough to fulfill the repetition rate of the most often repeated system information (in LTE terminology, system information corresponding to the first scheduling unit 132, as described above).

In one or more embodiments, within each recurring time window, the transmission of system information is carried out similar to the transmission of user data on DL-SCH (dynamic resource and transport format with signaling on L1/L2 control channel), with some exceptions. Instead of using an RNTI of a specific UE 120, a specific System-Information RNTI (SI-RNTI), indicating that system information to be read by all UEs 120 is being transmitted, is included in the corresponding L1/L2 control signaling. Also, for the last piece of system information to be transmitted within the window, the SI-RNTI is replaced with an End-of-System-Information RNTI (ESI-RNTI). The reception of an ESI-RNTI informs the UE 120 that no more system information is transmitted within the window. The UE 120 can stop demodulating and decoding the L1/L2 control channel when there is no more system information to be transmitted in the window, thus improving UE power-saving performance.

Moreover, the system information does not have to be transmitted in consecutive subframes. This way, the network transmitter 110 can dynamically avoid transmitting system

information in certain subframes when a more pressing need for subframes arises, e.g., when a subframe is needed for high priority downlink data transmission or for uplink transmission in case of TDD. In addition, the set of subframes in which system information is actually transmitted does not have to be the same between consecutive windows. Furthermore, the network transmitter 110 can dynamically vary the number of subframes used to carry system information without prior knowledge of the UE 120 (i.e., prior to the UE 120 reading the L1/L2 control channel).

As non-limiting examples, the teachings presented herein for transmitting system information yields several desirable properties. For example, there are several requirements and desired properties for the transmission of the dynamic part of the system information. From a UE power-consumption point of-view, it is desirable to transmit the different parts of the system information as close in time as possible to each other, in the ideal case in a set of consecutive subframes. This enables the UE 120 to receive the maximum amount of system information during a minimum reception time, reducing UE reception time and UE power consumption.

The teachings herein also allow system information to be transmitted in recurring time windows, where the particular subframes within each window used for carrying system information are selectable. If current conditions, e.g., competing transmission priorities permit, the system information can be transmitted in a contiguous set of subframes within the time window.

It is also desirable to have flexibility in terms of exactly where the system information is transmitted, i.e., exactly which set of subframes within a given time window carries the system information. Some subframes, depending on the situation, may not be available for transmitting system information. For example, some TDD subframes may not be available for downlink transmission. In another example, for latency reasons there may, in some situations, be a benefit to not having too many consecutive subframes used for transmission of system information, thus making them unavailable for downlink user data transmission. As such, it is also desirable to dynamically (with low delay) decide in exactly what subframes the system information is to be transmitted.

Further, it is desirable to have flexibility in the rate by which different parts of the system information is repeated. In this way, a higher repetition rate (shorter repetition period) can be used, e.g. in the case of wider overall transmission bandwidth, when the overhead of the system-information transmission is less of a concern. It is desirable to have flexibility in the number of subframes used to transmit the system information. As an example, in case of smaller overall bandwidth or larger cells, more subframes may be needed to transmit a given set of system information. Moreover, the amount of system information, e.g. neighbor lists and PLMN lists may be of different sizes for different cells.

The teachings presented herein provide for methods and apparatuses where system information is transmitted within recurring time windows, but with flexible selection of which subframes within those windows are used to carry system information. Figure 4 illustrates one

embodiment of program logic for transmitting system information from the network transmitter 110 to the UE 120. According to this embodiment, the baseband processor 130 included in the network transmitter 110 initializes the first subframe in the system-information window (Step 400). The baseband processor 130 then determines whether the current subframe is to be used for transmission of system information (Step 402). If so, the baseband processor 130 determines whether the current subframe is the last subframe in the window (Step 404). If the current subframe is the last subframe, the RNTI of the L1/L2 control channel is set to ESI-RNTI for indicating to the UE 120 that the subframe is the last subframe in the window containing system information. (Step 406). Otherwise, the control channel RNTI is set to SI-RNTI for indicating to the UE 120 that the subframe contains system information, but is not the last subframe. (Step 408). The corresponding system information is transmitted on the DL-SCH within the current subframe (Step 410). The baseband processor 130 determines whether the last window subframe has been transmitted (Step 412). If not, Steps 402 – 412 are repeated for the next subframe within the window. The system information transmission process ends when the last subframe is transmitted (Step 416).

Figure 5 illustrates one embodiment of program logic carried out by the UE 120 for processing the system information transmitted by the network transmitter 110. According to this embodiment, the UE 120 includes a baseband processor 140 for demodulating and decoding received subframes. A window detection and evaluation unit 150 included in or associated with the baseband processor 140 begins the window reception process by initializing the first subframe received within the window (Step 500). The baseband processor 150 then demodulates and decodes the L1/L2 control channel of the current subframe (Step 502). The window detection and evaluation unit 150 determines whether either SI-RNTI or ESI-RNTI is detected for the current subframe (Step 504). If so, the baseband processor 140 demodulates and decodes the corresponding DL-SCH transport block to retrieve the system information provided therewith (Step 506). The window detection and evaluation unit 150 then determines whether the current subframe is the last subframe in the window or the last subframe containing system information, e.g., whether the RNTI of the control channel is ESI-RNTI (Step 508). If neither condition exists, Steps 502 – 508 are repeated for the next subframe within the window (Step 510). The baseband processor 140 stops demodulating and decoding DL-SCH transport blocks when either the last subframe or ESI-RNTI is detected, indicating no more system information is forthcoming (Step 512). Thus, the UE 120 demodulates and decodes the control channel starting with the first subframe in the system information window and checks for specific system information RNTIs until either the ESI-RNTI is detected or the last window subframe is received.

As discussed above, some parts of the system information (corresponding to the scheduling units 132) may not need to be repeated as often as some other parts of the system information, implying that certain windows will include more data (more scheduling units 132) than

other windows. Thus, the window size may be of varying length, with a longer window at the time instances where more system information (more scheduling units 132) is to be transmitted. Figure 6 provides an illustration of a variable-length window embodiment.

Note that the window size can be specified in either the radio-access specification or be configurable. In case of a configurable window size, the UE 120 can use a default (large) window size before it is informed (via the system information) about the actual window size. Moreover, the RNTI may indicate more than just system information such as more details about the system information. In one embodiment, several different SI-RNTIs could be used, e.g., SI-RNTI1, SI-RNTI2, SI-RNTI3, ..., with corresponding multiple ESI-RNTIs, e.g., ESI-RNTI1, ESI-RNTI2, ESI-RNTI3, etc.

In one embodiment, the scheduling units 132 transmitted at the same time use the same system-information window as shown in the upper part of Figure 7. Alternatively, the scheduling units 132 are transmitted using different system-information windows as shown in the lower part of Figure 7. In either embodiment, system information is transmitted in regularly occurring system-information windows, with specific RNTIs indicating the presence of system information in a subframe, and with another specific RNTI indicating the end of system information transmission.

Of course, other variations are contemplated. Thus, the foregoing description and the accompanying drawings represent non-limiting examples of the methods and apparatus taught herein for the transmission of system information. As such, the present invention is not limited by the foregoing description and accompanying drawings. Instead, the present invention is limited only by the following claims and their legal equivalents.

CLAIMS

What is claimed is:

1. A method of transmitting system information on the downlink of a wireless communication network comprising:

transmitting (410) system information in recurring time windows overlaid on a sequence of transmit channel subframes;

dynamically selecting (402) which subframes within a given time window are to be used for carrying the system information; and

including (406 / 408) an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

2. The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a contiguous set of subframes within the given time window.

3. The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a non-contiguous set of subframes within the given time window.

4. The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting which subframes to use for transmitting system information in view of competing transmission priorities associated with other control or data signaling.

5. The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information comprises using an RNTI (Radio Network Temporary Identifier) to denote that the subframe carries system information.

6. The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using an end-of-system-information indicator in a last subframe of the given time window that carries system information.

7. The method of claim 1, further comprising varying window sizes of the recurring time windows.

8. The method of claim 1, further comprising dynamically configuring a window size for the recurring time windows.

9. The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using different indicators corresponding to different types of system information, such that the indicator used for a particular subframe indicates the type of system information carried in that subframe.

10. A network transmitter (110) comprising a baseband processor (130) configured to:

generate system information in recurring time windows overlaid on a sequence of transmit channel subframes;

dynamically select which subframes within a given time window are to be used for carrying system information; and

include an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

11. The network transmitter of claim 10, wherein the network transmitter comprises a radio base station configured for operation in accordance with 3GPP E-UTRA standards.

12. A method of transmitting system information on a downlink shared channel structured as successive subframes, the method comprising:

transmitting (400 – 416) system information in regularly occurring time windows, each time window spanning some number of successive subframes; and

indicating (406 / 408) to receiving user equipment which subframes within a given time window carry system information.

13. The method of claim 12, wherein indicating to receiving user equipment which subframes within a given time window carry system information includes indicating the last subframe within the given time window that carries system information, thereby allowing the receiving user equipment to cease monitoring for system information within the given time window.

14. The method of claim 12, further comprising dynamically selecting which subframes within a given time window are to be used for carrying system information.

15. A method for a mobile station to receive system information from a supporting wireless communication network, the method comprising:

beginning monitoring (500 and 502) for the receipt of system information at the start of each time window in a succession of recurring time windows used for the transmission of system information, each said time window spanning a number of signal subframes;

within each time window, monitoring (504 – 510) each signal subframe for an indication of system information and reading system information from the signal subframe if such information is present; and

terminating monitoring (512) at least at the end of the time window.

16. The method of claim 15, further comprising recognizing an end-of-system-information indicator in a signal subframe received within the time window and terminating monitoring for the time window in response.

17. The method of claim 15, further comprising adapting to changing or configurable window sizes used for the time window.

18. The method of claim 15, further comprising storing a default window size for monitoring for system information transmissions.

19. The method of claim 18, further comprising monitoring for system information transmissions based on a specified window size indicated in received information rather than the default window size.

20. The method of claim 15, further comprising recognizing different types of system information based on recognizing different system information indicators in different signal subframes.

21. A mobile station (120) comprising a baseband processor (140) operable to:

begin monitoring for the receipt of system information at the start of each time window in a succession of recurring time windows used for the transmission of system information, each said time window spanning a number of signal subframes;

within each time window, monitor each signal subframe for an indication of system information and reading system information from the signal subframe if such information is present; and

terminate monitoring at least at the end of the time window.

22. The mobile station of claim 21, wherein the baseband processor is operable to recognize an end-of-system-information indicator in a signal subframe received within the time window and terminate monitoring for the time window in response.

23. The mobile station of claim 21, wherein the baseband processor is operable to adapt to changing or configurable window sizes used for the time window.

24. The mobile station of claim 21, wherein the baseband processor is operable to monitor for system information transmissions based on a specified window size indicated in received information rather than a default window size.

25. The mobile station of claim 21, wherein the baseband processor is operable to recognize different types of system information based on different system information indicators detected in different signal subframes.

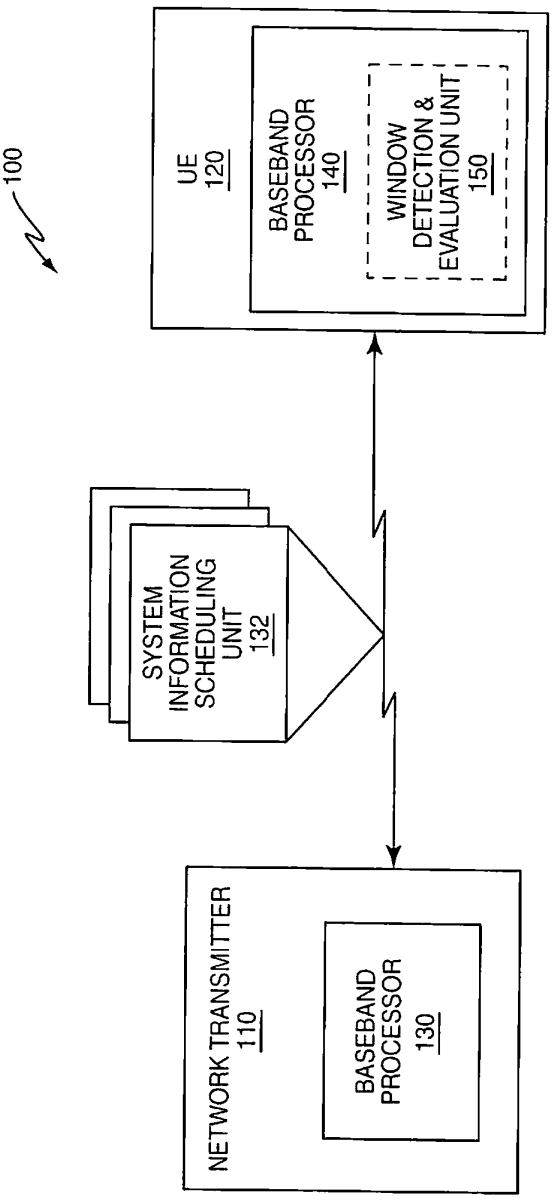
100
UE
120
BASEBAND
PROCESSOR
140
WINDOW
DETECTION &
EVALUATION UNIT
150
SYSTEM
INFORMATION
SCHEDULING
UNIT
132
NETWORK TRANSMITTER
110
BASEBAND
PROCESSOR
130

FIG. 1

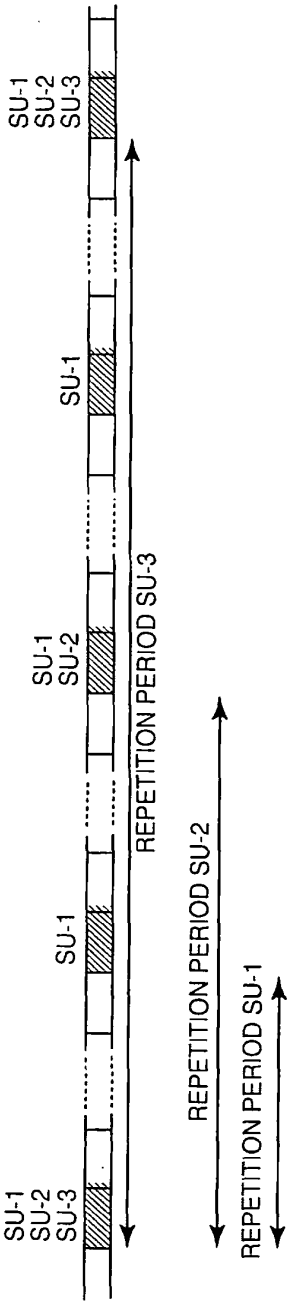
SU-1
SU-2
SU-3
SU-1
SU-1
SU-2
SU-3
REPETITION PERIOD SU-3
REPETITION PERIOD SU-2
REPETITION PERIOD SU-1

FIG. 2


FRAME 0
FRAME 1
FRAME 2
FRAME 3
FRAME 4
FRAME 5
FRAME 6
FRAME 7
FRAME 8
FRAME 9
FRAME 10
SYSTEM INFORMATION WINDOW (L SUBFRAMES)
SYSTEM INFORMATION WINDOW

FIG. 3

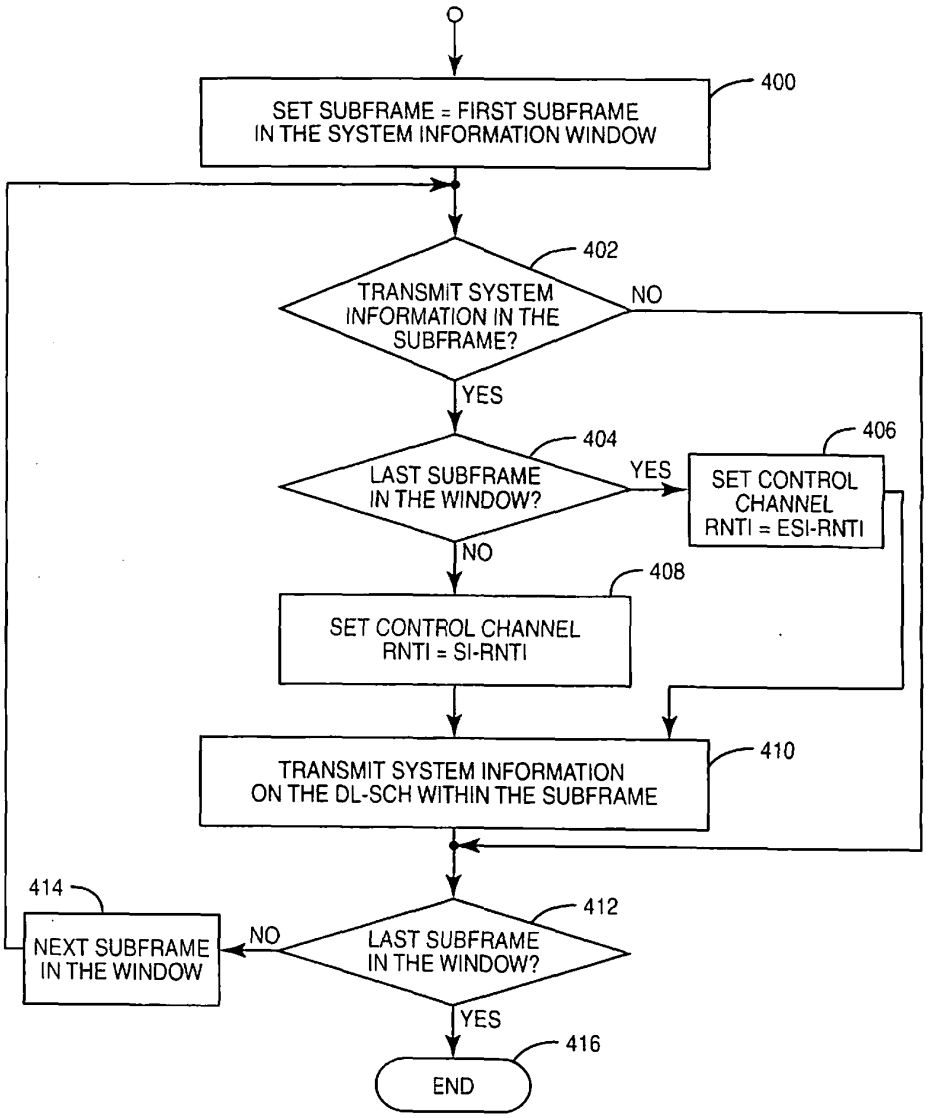
SET SUBFRAME = FIRST SUBFRAME IN THE SYSTEM INFORMATION WINDOW
400
TRANSMIT SYSTEM INFORMATION IN THE SUBFRAME?
402
NO
YES
LAST SUBFRAME IN THE WINDOW?
404
YES
SET CONTROL CHANNEL RNTI = ESI-RNTI
406
NO
SET CONTROL CHANNEL RNTI = SI-RNTI
408
TRANSMIT SYSTEM INFORMATION ON THE DL-SCH WITHIN THE SUBFRAME
410
LAST SUBFRAME IN THE WINDOW?
412
NO
NEXT SUBFRAME IN THE WINDOW
414
YES
END
416

FIG. 4

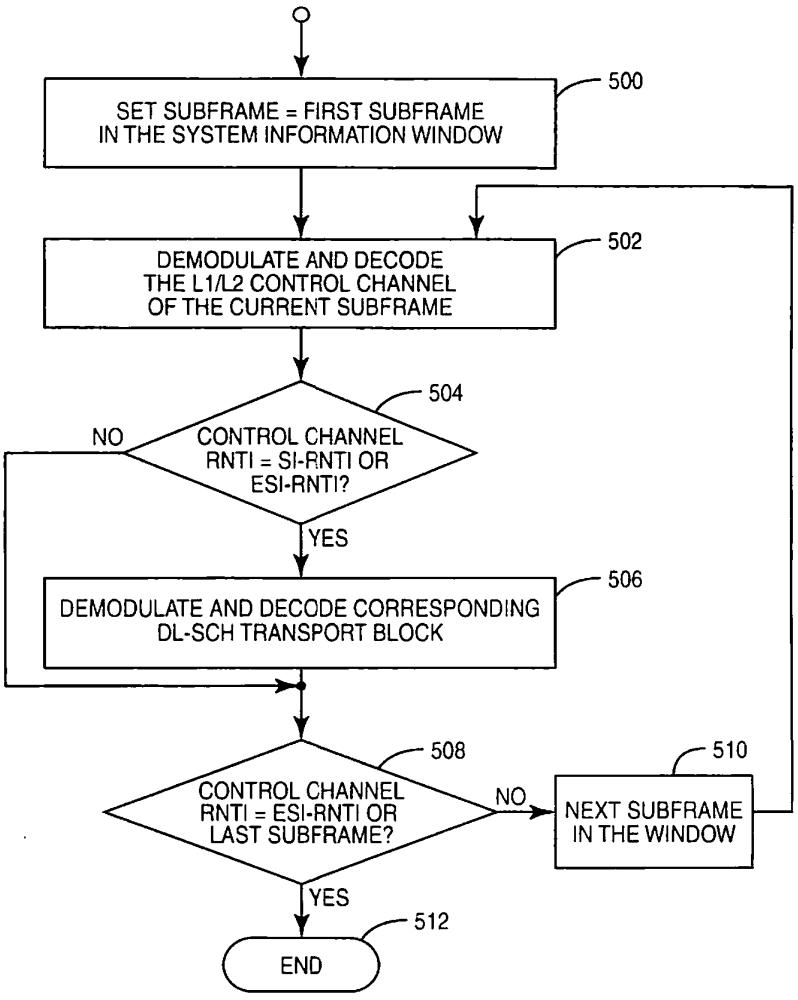
SET SUBFRAME = FIRST SUBFRAME IN THE SYSTEM INFORMATION WINDOW
500
DEMODULATE AND DECODE THE L1/L2 CONTROL CHANNEL OF THE CURRENT SUBFRAME
502
CONTROL CHANNEL RNTI = SI-RNTI OR ESI-RNTI?
504
NO
YES
DEMODULATE AND DECODE CORRESPONDING DL-SCH TRANSPORT BLOCK
506
CONTROL CHANNEL RNTI = ESI-RNTI OR LAST SUBFRAME?
508
NO
NEXT SUBFRAME IN THE WINDOW
510
YES
END
512

FIG. 5

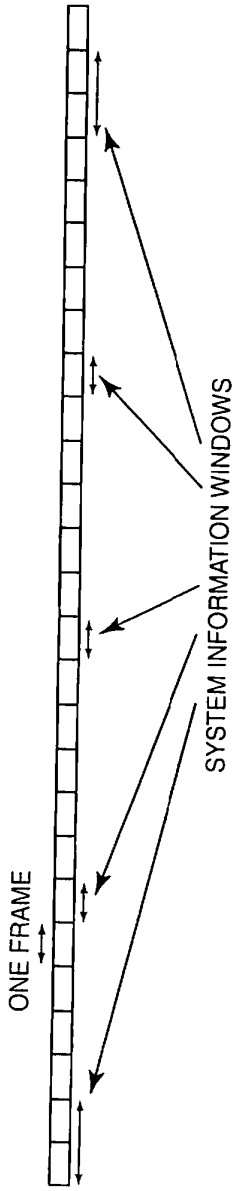

FIG. 6

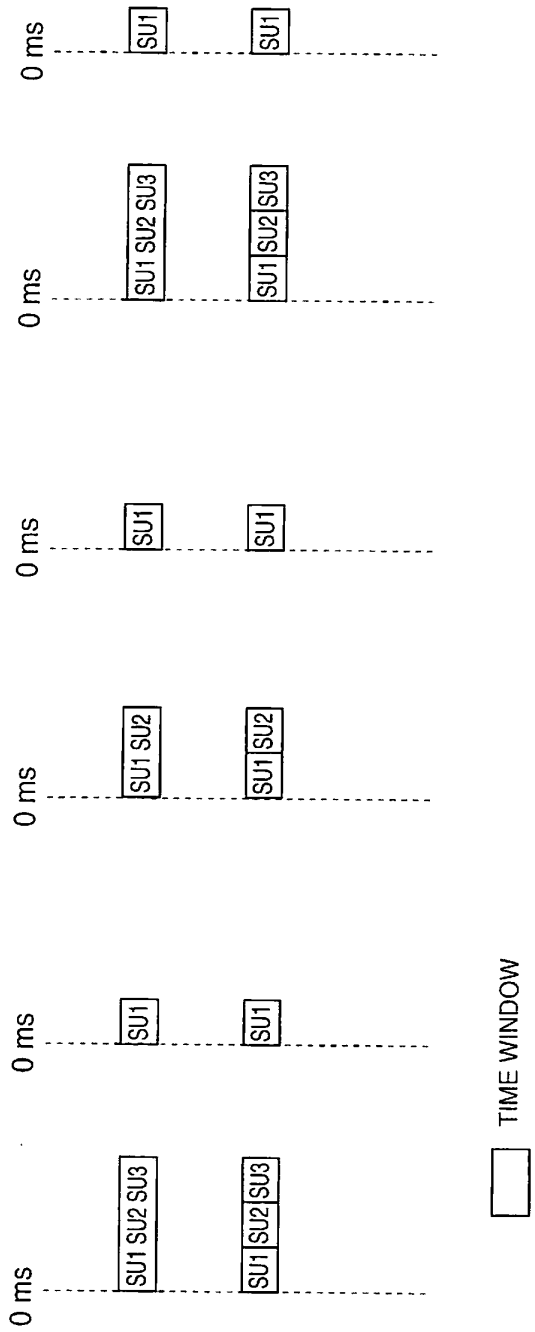
0 ms
SU1
SU1
0 ms
SU1 SU2 SU3
SU1 SU2 SU3
0 ms
SU1
SU1
0 ms
SU1 SU2
SU1 SU2
0 ms
SU1
SU1
0 ms
SU1 SU2 SU3
SU1 SU2 SU3
TIME WINDOW

FIG. 7

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— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*
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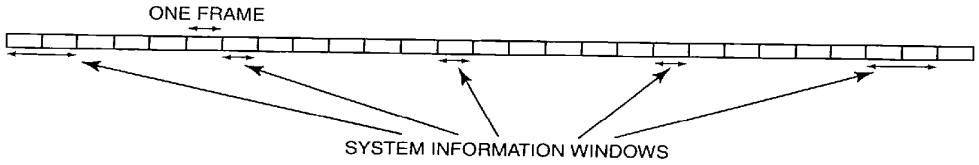

FIG. 6

(57) Abstract: In one embodiment, a method of transmitting system information on a down link shared channel structured as successive subframes includes transmitting (400 - 416) system information in regularly occurring time windows, each time window spanning some number of successive subframes. The method further includes indicating (406 / 408) to receiving user equipment (120) which subframes within a given time window carry system information. The method and variations of it are applied, for example, to the transmission of dynamic system information on the down link shared channel or other down link channel in a 3GPP E-UTRA wireless communication network (100).

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Application Number:	60944628
International Application Number:	
Confirmation Number:	5716
Title of Invention:	Transmission of System Information
First Named Inventor/Applicant Name:	Erik Dahlman
Customer Number:	24112
Filer:	Michael Murphy/Laura Wade
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Attorney Docket Number:	4015-5854 / P24241-US1
Receipt Date:	18-JUN-2007
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1	Application Data Sheet	AppData.pdf	1517294	no	5
Warnings:					
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2		Application.pdf	1586828	yes	23

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Specification	1	8
Claims	9	14
Abstract	15	15
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Drawings	20	23

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PTO/SB/14 (08-05)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	4015-5854 / P24241-US1
	Application Number	
Title of Invention	Transmission of System Information	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	4015-5854 / P24241-US1
	Application Number	
Title of Invention	Transmission of System Information	

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Application Information:

Title of the Invention	Transmission of System Information		
Attorney Docket Number	4015-5854 / P24241-US1	**Small Entity Status Claimed** ☐	
Application Type	Provisional		
Subject Matter	Utility		
Suggested Class (if any)		**Sub Class (if any)**	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	4	**Suggested Figure for Publication (if any)**	
Publication Information:			
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☐ Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not been and will not be the subject of an application filed in another country, or under a multilateral agreement, that requires publication at eighteen months after filing.			

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	4015-5854 / P24241-US1
	Application Number	
Title of Invention	Transmission of System Information	

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Signature	/Michael D. Murphy/			Date (YYYY-MM-DD)	2007-06-18
First Name	Michael	Last Name	Murphy	Registration Number	44958

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	4015-5854 / P24241-US1
	Application Number	
Title of Invention	Transmission of System Information	

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TRANSMISSION OF SYSTEM INFORMATION

BACKGROUND

Technical Field

[0001] The present invention generally relates to wireless communication networks, and particularly relates to the transmission of system information to user equipment operating in such networks, such as the transmission of system information by radio base stations in a wireless communication network configured according to 3GPP E-UTRA standards, also referred to as 3GPP LTE (Long Term Evolution).

Background

[0002] In the 3GPP Long-Term Evolution (LTE), downlink user-data transmission is carried out on the Downlink Shared Channel (DL-SCH). In LTE, the time dimension is divided into radio frames of length 10 ms, where each radio frame consists of 10 subframes, each of length 1 ms corresponding to14 OFDM symbols. See, e.g., Fig. 1. Note that, in case of Time Division Duplex (TDD), only a subset of the subframes of one frame is available for downlink transmission, with the remaining subframes used for uplink transmission. On the other hand, in case of Frequency Division Duplex (FDD), all subframes on a downlink carrier are available for downlink transmission.

[0003] In LTE, the overall time/frequency-domain physical resource is divided into resource blocks, where each resource block consists of twelve OFDM subcarriers during one subframe. DL-SCH transmission to a user is carried out using a set of such resource blocks during one subframe. Fig. 2 illustrates the described arrangement.

[0004] Layer 1 / Layer 2 (L1/L2) control signaling, also known as the Physical Downlink Control Channel (PDCCH), is transmitted at the beginning of each subframe. The L1/L2 control channel is, among other things, used to inform a User Equipment (UE) about the following: if the DL-SCH carries data to this UE in the given subframe, more specifically, if the DL-SCH carries data to a specific UE in the given subframe, the L1/L2 control signaling includes the RNTI

(Radio Network Temporary Identifier) of this specific UE; the physical resource, more specifically the specific set of resource blocks, that is used for the DL-SCH transmission to this specific UE in the given subframe; the transport format (modulation scheme and coding rate) that is used for DL-SCH transmission to this specific UE in the given subframe.

[0005] Separate DL-SCH transmission, using different physical resources (different resource blocks), can be carried out to different UEs during the same subframe. In this case there are multiple L1/L2 control channels, one for each DL-SCH transmission.

[0006] In addition to user data, system information needs to be transmitted on the downlink within each cell. Such system information may e.g. include: public Land Mobile Network (PLMN) identity/identities, identifying the operator(s) to which the cell "belongs"; Neighbor-cell list, i.e. a list of the cells that are neighbors to the current cell; and different parameters used by the user terminal when accessing the system, e.g. random-access parameters and cell-access restrictions. The system information can be divided into two parts, with one part being fixed and one part being dynamic. The fixed part of the system information is transmitted on a pre-determined physical resource using a pre-determined transport format. There is thus no flexibility in the amount of information in the fixed part of the system information. There is also no flexibility in the transmission structure (the physical resource and the transport format) used for the fixed part of the system information. In LTE, the fixed part of the system information corresponds to the BCH transport channel. It is currently assumed that the BCH is transmitted in the six centre resource blocks in subframe #0 of each frame.

[0007] The dynamic part of the system information is assumed to be transmitted using the DL-SCH, or at least on a DL-SCH-like channel, similar to normal data transmission as described above. New UEs continuously "enter" the cell, either entering from a neighbor cell, due to power-on, or upon return from out-out-service, and it must be possible for such UEs to quickly acquire the system information. Thus the system information (both the fixed part and the dynamic part) should be repeated regularly.

[0008] As an example, in LTE the fixed part of the system information (the BCH information) is assumed to be repeated every 40 ms. Also the dynamic part of the system information should be repeated more or less regularly. However, different parts of the dynamic part of the system information are more or less time critical and thus need to be repeated more or less often. This can be described so that the dynamic part of the system information is divided into different so-called scheduling units where, in general, information corresponding to scheduling unit number n should be repeated more often than information corresponding to scheduling unit number n+1. As an example, scheduling unit #1 (SU-1) may be repeated (approximately) once every 80 ms, scheduling unit #2 (SU-2) may be repeated (approximately) once every 160 ms, scheduling unit #3 (SU-3) may be repeated (approximately) once every 320 ms, etc.

SUMMARY

[0009] The invention described below allows for transmission of the dynamic part of the system information fulfilling these requirements and desirable properties while, at the same time, allowing for low UE complexity.

[0010] One aspect of the teachings presented herein is to transmit the system information in regularly occurring (system information) windows, with specific RNTIs indicating the presence of system information in a subframe, and with another specific RNTI indicating the end of system information transmission (thus allowing for the UE to stop receiving when no more system information is expected).

[0011] In one embodiment, a method of transmitting system information on a downlink shared channel structured as successive subframes includes transmitting system information in regularly occurring time windows, each time window spanning some number of successive subframes. The method further includes indicating to receiving user equipment which subframes within a given time window carry system information.

[0012] Of course, the present invention is not limited to the above features and advantages. Indeed, those skilled in the art will recognize additional features and advantages upon reading the following detailed description, and upon viewing the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] Fig. 1 is a diagram of a known frame/subframe signal structure, such as may be used on a downlink channel of a 3GPP E-UTRA network.

[0014] Fig. 2 is a diagram of a known transport channel configuration for the transmission of static system information.

[0015] Fig. 3 is a diagram of overlaying or otherwise defining a recurring sequence of time windows for the transmission of dynamic system information using subframes falling within the defined time windows.

[0016] Fig. 4 is a diagram of variably sized time windows for the transmission of system information.

DETAILED DESCRIPTION

[0017] Fig. 3 illustrates one embodiment of transmitting the dynamic (possibly changing) system information within regularly occurring windows with well-defined starting points (specific subframes) and of a certain size in number of (consecutive) subframes. In the illustration, these system-information windows, more generally regarded as recurring time windows defined for the transmission of system information, start at subframe #5 of the frame with frame number 8*k and have a size of 13 subframes. The network only transmits the dynamic part of the system information within these windows.

[0018] The window should thus occur (be repeated) sufficiently often to fulfill the repetition rate of the most often repeated system information (in LTE terminology, system information corresponding to scheduling unit #1). System information corresponding to other scheduling units with lower repetition rate should be transmitted within a subset of the windows. As an

example, system information corresponding to scheduling unit # 2 could be transmitted within every second window, system information corresponding to scheduling unit #3 could be transmitted in every fourth window, etc. When (within what windows) system information corresponding to a certain scheduling unit is to be transmitted could either be specified or signaled.

[0019] In one or more embodiments, within each such system-information window, the transmission of system information is carried out similar to the transmission of user data on DL-SCH (dynamic resource and transport format with signaling on L1/L2 control channel), with the following exceptions: instead of an RNTI of a specific UE, a specific System-Information RNTI (SI-RNTI), indicating that system information to be read by all UEs is being transmitted, is included in the corresponding L1/L2 control signaling; for the last piece of system information to be transmitted within the window, the SI-RNTI is replaced by an End-of-System-Information RNTI (ESI-RNTI). The reception of an ESI-RNTI informs the UE that no more system information is transmitted within the window. Thus the UE does not need to receive further, despite the fact that the entire window has not yet been received, thus allowing for reduced UE power consumption.

[0020] It should be noted that the system information does not need to be transmitted in all subframes within the window. Furthermore, the system information does not need to be transmitted in consecutive subframes. Furthermore, the number of subframes used for system information can be dynamically varied without UE prior knowledge (prior to reading the L1/L2 control).

[0021] As non-limiting examples the teachings presented herein for transmitting system information fulfills to desirable properties of the previous section. For example, there are several requirements and desired properties of the transmission of the dynamic part of the system information. From a UE power-consumption point of-view, it is desirable to transmit the different parts of the system information as close in time as possible to each other, in the ideal case in a

set of consecutive subframes. This will allow for a UE to receive the maximum amount of system information during a minimum reception time, thus reducing UE reception time and thus UE power consumption.

[0022] The teachings herein allow system information to be transmitted in recurring time windows, where the particular subframes within each window used for carrying system information are selectable. If current conditions, e.g., competing transmission priorities permit, the system information can be transmitted in a contiguous set of subframes within the time window.

[0023] At the same time, it is desirable to have flexibility in terms of exactly where (in exactly what set of subframes within given time windows) the system information is transmitted. This is because some subframes, depending on the situation, may not be available for transmission of system information. As an example, in case of TDD some subframes may not even be available for downlink transmission. As another example, for latency reasons there may, in some situations, be a strong need not to have too many consecutive subframes used for transmission of system information, thus making them unavailable for downlink user data transmission. Thus it is also desirable to be able to dynamically (with low delay) decide in exactly what subframes the system information is to be transmitted.

[0024] Further, it is desirable to have flexibility in the rate by which different parts of the system information is repeated. In this way, a higher repetition rate (shorter repetition period) can be used, e.g. in case of wider overall transmission bandwidth, when the overhead of the system-information transmission is less of an issue. It is desirable to have flexibility in the number of subframes used to transmit the system information. As an example, in case of smaller overall bandwidth or larger cells, more subframes may be needed to transmit a given set of system information. Another reason is that the amount of system information, e.g. neighbor lists and PLMN lists, may be of different sizes for different cells.

[0025] The teachings presented herein provide for methods and apparatuses where system information is transmitted within recurring time windows, but with flexible selection of which subframes within those windows are used to carry system information. Exemplary network behavior in one embodiment thus includes: 1) set subframe equal to first subframe in the window; 2) if this subframe is to be used for transmission of system information then (a) if this is the last piece of system information to be transmitted within the window, set RNTI of L1/L2 control channel to ESI-RNTI, otherwise, set RNTI of the L1/L2 control channel to SI-RNTI, (b) transmit system information on the DL-SCH within the subframe; 3) if all system information is not transmitted, increase subframe by one and repeat from 2); and 4) if all system information for the window is transmitted, then end.

[0026] Exemplary corresponding UE behavior in at least one embodiment includes: 1) set subframe equal to first subframe in the window; 2) demodulate and decode L1/L2 control channel of subframe; 3) if SI-RNTI or ESI-RNTI, demodulate and decode corresponding DL-SCH transport block; 4) if not ESI-RNTI and subframe not equal to last subframe in window, increase subframe by one and repeat from 2); and 5) if last subframe then end.

[0027] As discussed above, some parts of the system information may not need to be repeated as often as some other parts of the system information (different scheduling units), implying that certain windows will include more data (more scheduling units) than other windows. Thus, the window size may be of varying length, with a longer window at the time instances where more system information (more scheduling units) is to be transmitted. Fig. 4 provides an illustration of a variable-length window embodiment.

[0028] Note that the window size could either be specified in the radio-access specification or be configurable. In case of a configurable window size, the UE could use a default (large) window size before it is informed (via the system information) about the actual window size. There could be reasons to have the RNTI indicating not just system information but also somewhat more details about the system information. In practice this would imply the use of

several different SI-RNTI, i.e. SI-RNTI1, SI-RNTI2, SI-RNTI3, ..., and corresponding multiple ESI-RNTI, i.e. ESI-RNTI1, ESI-RNTI2, ESI-RNTI3, ...

[0029] Of course, other variations are contemplated. For example, further information is presented herewith in the form of the included ATTACHMENT 1 following the claims presented. Thus, the foregoing description and the accompanying drawings represent non-limiting examples of the methods and apparatus taught herein for the transmission of system information. As such, the present invention is not limited by the foregoing description and accompanying drawings. Instead, the present invention is limited only by the following claims and their legal equivalents.

CLAIMS

What is claimed is:

1. A method of transmitting system information on the downlink of a wireless communication network comprising:

transmitting system information in recurring time windows overlaid on a sequence of transmit channel subframes;

dynamically selecting which subframes within a given time window are to be used for carrying system information; and

including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

2. The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a contiguous set of subframes within the given time window.

3. The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting a non-contiguous set of subframes within the given time window.

4. The method of claim 1, wherein dynamically selecting which subframes within a given time window are to be used for carrying system information comprises selecting which subframes to use for transmitting system information in view of competing transmission priorities associated with other control or data signaling.

5. The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information comprises using an RNTI (Radio Network Temporary Identifier) to denote that the subframe carries system information.

6. The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using an end-of-system-information indicator in a last subframe of the given time window that carries system information.

7. The method of claim 1, further comprising varying window sizes of the recurring time windows.

8. The method of claim 1, further comprising dynamically configuring a window size for the recurring time windows.

9. The method of claim 1, wherein including an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information includes using different indicators corresponding to different types of system information, such that the indicator used for a particular subframe indicates the type of system information carried in that subframe.

10. A network transmitter comprising one or more processing circuits configured to:

transmit system information in recurring time windows overlaid on a sequence of transmit channel subframes;

dynamically select which subframes within a given time window are to be used for carrying system information; and

include an indicator in each of the selected subframes to indicate to receiving user equipment that the subframe carries system information.

11. The network transmitter of claim 10, wherein the network transmitter comprises a radio base station configured for operation in accordance with 3GPP E-UTRA standards.

12. A method of transmitting system information on a downlink shared channel structured as successive subframes, the method comprising:

transmitting system information in regularly occurring time windows, each time window spanning some number of successive subframes; and

indicating to receiving user equipment which subframes within a given time window carry system information.

13. The method of claim 12, wherein indicating to receiving user equipment which subframes within a given time window carry system information includes indicating the last subframe within the given time window that carries system information, thereby allowing the receiving user equipment to cease monitoring for system information within the given time window.

14. The method of claim 12, further comprising dynamically selecting which subframes within a given time window are to be used for carrying system information.

15. A method for a mobile station to receive system information from a supporting wireless communication network, the method comprising:

beginning monitoring for the receipt of system information at the start of each time window in a succession of recurring time windows used for the transmission of system information, each said time window spanning a number of signal subframes;

within each time window, monitoring each signal subframe for an indication of system information and reading system information from the signal subframe if such information is present; and

terminating monitoring at least at the end of the time window.

16. The method of claim 15, further comprising recognizing an end-of-system-information indicator in a signal subframe received within the time window and terminating monitoring for the time window in response.

17. The method of claim 15, further comprising adapting to changing or configurable window sizes used for the time window.

18. The method of claim 15, further comprising storing a default window size for monitoring for system information transmissions.

19. The method of claim 18, further comprising monitoring for system information transmissions based on a specified window size indicated in received information rather than the default window size.

20. The method of claim 15, further comprising recognizing different types of system information based on recognizing different system information indicators in different signal subframes.

ABSTRACT OF THE DISCLOSURE

In one embodiment, a method of transmitting system information on a downlink shared channel structured as successive subframes includes transmitting system information in regularly occurring time windows, each time window spanning some number of successive subframes. The method further includes indicating to receiving user equipment which subframes within a given time window carry system information. The method and variations of it are applied, for example, to the transmission of dynamic system information on the downlink shared channel or other downlink channel in a 3GPP E-UTRA wireless communication network.

ATTACHMENT 1

TSG-RAN WG1 #X R1-07xxxx

Source: Ericsson
Title:
Agenda Item:
Document for: Discussion and decision

1. Discussion

1.1 Introduction

The LTE system information, corresponding to the BCCH logical channel, is divided into two parts

- System information in the Master Information Block (MIB), carried on the BCH transport channel
- The remaining system information (the remaining System Information Blocks, SIBs), carried on the DL-SCH or, at least, on a DL-SCH-like transport channel[1]. We will here refer to this information as the dynamic system information

Different parts of the dynamic system information may be transmitted with different *repetition periods* depending on the acceptable delay in the acquisition of each specific part of the system-information. SIBs that are transmitted with the same repetition period are part of the same *Scheduling Unit* (SU)

The number of subframes needed to transmit a certain SU may vary for at lest two reasons:

- The amount of system information within the SU may vary, e.g. SU-1 containing different number of PLMN identities or an optional neighbor list
- The number of subframes needed to transmit a given amount of system information may vary e.g. depending on the overall system bandwidth and the cell size, with smaller bandwidth and/or larger cell sizes potentially leading to a need for more subframes (more time) to transmit a given amount of system information.

Similar to "normal" DL-SCH transmission, transmission of the dynamic system information should allow for dynamic frequency-domain scheduling and transport-format selection, with the UE acquiring the instantaneous frequency-domain resource and transport format from the corresponding PDCCH.

The remaining key question regarding system-information scheduling concerns the system-information *time-domain* scheduling and the corresponding signaling.

- In what subframes the system information is or can be transmitted?
- How does the UE acquire knowledge about when the system information is actually transmitted?

[1] There may be certain specification-related benefits of defining a new "DL-SCH-like" transport channel for the dynamic system information, rather than assuming that the dynamic system information is mapped a DL-SCH. As an example, it would then be more straightforward to specify that a UE should be able to demodulate/decode the dynamic system information (of the current cell) in parallel to normal DL-SCH user-data reception (the *system-information* transport channel demodulated/decoded in parallel to DL-SCH). Alternatively one would need to specify that the UE should be able to demodulate/decode two DL-SCH in parallel, *assuming that one of the DL-SCH carries system information.*

1.1.2 Static scheduling

On the other extreme is a pre-specified (static) scheduling, i.e. it is *specified* in what subframes the different parts of the dynamic system information is transmitted. However, this is not an acceptable approach either, for several reasons:

- According to above, certain flexibility in the scheduling is needed simply due to the fact that the number of subframes needed for the system-information transmission may vary, e.g. depending on the system bandwidth and the cell size. Thus a fully static time-domain scheduling is not possible.
- Although from a UE power consumption point-of-view, it is preferred to transmit different scheduling units as close as possible to each other, i.e. in consecutive subframes, this may not always be possible. In case of TDD, some subframes are not even available for downlink transmission. Furthermore, for user-data-latency reasons, it may not always be acceptable to have a large number of consecutive subframes reserved for system-information transmission, thus being potentially unavailable for normal DL-SCH user-data transmission.

Instead there is a need for a system-information scheduling that allows for certain flexibility in the time-domain scheduling without leading to unacceptable negative impact on the possibility for power-efficient DRX operation when acquiring system information. Below we outline two alternatives:

- Semi-static scheduling, with SU-1 indicating the exact time-domain scheduling of the remaining scheduling units.
- Dynamic scheduling withing a *scheduling window, allowing for a more dynamic scheduling of the scheduling units*

1.2 Semi-static scheduling

With this approach, a *Scheduling Block* in SU-1, transmitted once every 80 ms, informs UEs about the time-domain scheduling (frame and subframe) of the remaining scheduling units.

Although a possible approach, there are some drawbacks with this approach:

- Additional scheduling information to be transmitted on SU-1, implying larger SU-1 payload
- The scheduling of the remaining scheduling units must be decided at the time of the transmission of SU-1 which is only transmitted once every 80 ms
- Not clear how to allow for a flexible size (in terms of number of subframes) for the scheduling units. One possibility would be that the scheduling block indicates the first subframe of the scheduling unit and that the UE then continuous to read PDCCH to find out if additional subframes are used for the transmission of the scheduling unit

1.3 Dynamic scheduling with scheduling window

This approach can be seen as dynamic scheduling, according to Section **Error! Reference source not found.**, with certain additional restrictions on the scheduling instants. Alternatively it can be seen as the semi-static scheduling, according to the previous section (Section 0), extending with a certain degree of dynamic flexibility in the scheduling. With this approach, the system information is transmitted within periodically occurring *system-information windows* with well-defined starting points and consisting of a well-defined number of consecutive subframes, see Figure 1.

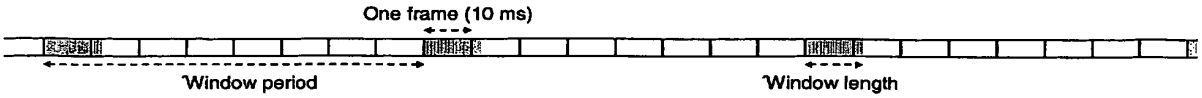

Figure 1 System-information windows. Each window consists of a number of subframes. In the figure, the scheduling window occurs once every 80 ms, corresponding to the repetition period of SU-1.

Within the window, system information is not necessarily transmitted within every subframe. Rather, the network can, in principle, transmit the system information in an arbitrary set of subframes of the window, as illustrated in Figure 2 and the set of subframes in which the system information is actually transmitted does not have to be the same between consecutive windows. On the receiver side, the UE demodulates and decodes the PDCCH, starting from the first subframe of the system-information window and check for specific *System-Information RNTIs*. These RNTIs do not just indicate the presence of system information but also the specific scheduling unit being transmitted (one specific RNTI for each scheduling unit) in order for the UE to read DL-SCH only for scheduling units not yet acquired or scheduling units that needs to be re-acquired.

In this way the network can dynamically avoid transmitting system information in certain subframes, should the need occur (TDD, subframe needed for other purposes, etc.). It should be noted that the UE would anyway, even with a fully pre-determined time-domain scheduling, need to demodulate and decode the PDCCH in order to acquire the frequency-domain scheduling as well as the transport format of the system-information transmission.

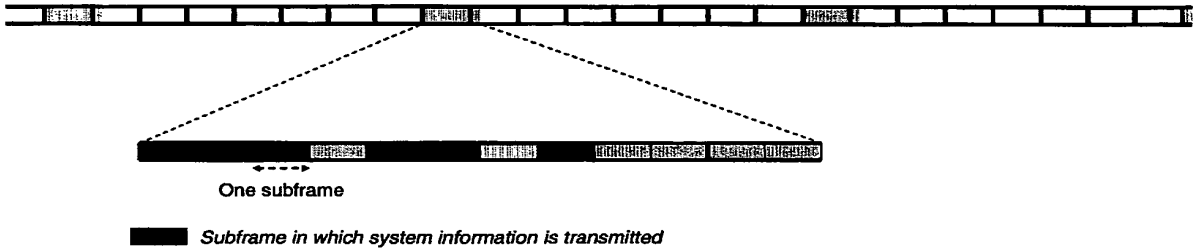

Figure 2 Transmission of system information within a window of size 12 subframes (Type 1 frame structure assumed)

In order for the UE to be able to stop demodulating the PDCCH when there is no additional system information within the window, the last system-information transmission within the window can be indicated by specific *End-of-System-Information RNTIs* (one for each scheduling unit). This would allow for the UE to stop demodulating/decoding the PDCCH when there is no more system-information to be transmitted within the window, thus improving UE power-saving performance.

In case the number of SUs and mapping of SIBs onto SUs is flexible in the standard, additional information on the number of SUs that UE could expect needs to be signaled to the UE.

The system-information windows should occur with a period corresponding to the required repetition period of the most frequently occurring scheduling unit (SU-1). System information corresponding to SU-1 would then be transmitted within each system-information window while less frequently occurring scheduling units would be transmitted only within a sub-set of the system-information windows. As an example, system information corresponding to SU-2 could be transmitted within every second window, system information corresponding to SU-3 could be transmitted within every fourth window, etc., see Figure 3. The transmission timing corresponding to each scheduling unit could either be pre-specified if RAN2 manages to agree to limited amount of transmission periods or signaled e.g. as part of SU-1 in case more specific values for transmitting SUs need to be specified. Taking into account that the amount of system information would not be the same in each window, one could thus also consider having a variable window size with a larger window size for windows in which system information corresponding to more scheduling units are to be transmitted.

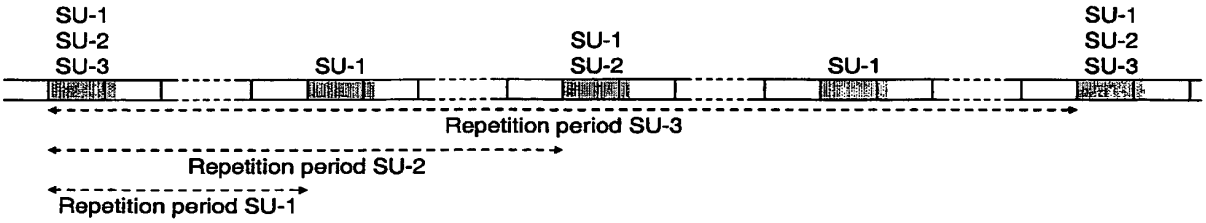

Figure 3 Scheduling of scheduling units to different system-information windows.

If it is possible to transmit all system information in consecutive subframes, the network will do so and the time needed to receive the corresponding system information can be minimized.

The scheme is applicable both for FDD and TDD (in case of TDD, the SU content will simply be scheduled in the next available DL subframe).

In case of small cells, with the flexibility allowed with the proposed scheme, there is always a possibility to schedule users together with system information by delaying content of SU by few subframes.

2. Summary and conclusions

In this paper we have outlined two alternative approaches to the time-domain scheduling of the dynamic part of the system information:

- Semi-static scheduling with SU-1 indicating the scheduling of the remaining scheduling units.
- Dynamic scheduling with scheduling window

Of these two approaches we prefer and propose the window-based approach as this allows for the dynamic scheduling of the system information without compromising the possibility for "optimal" DRX for the system-information reception.

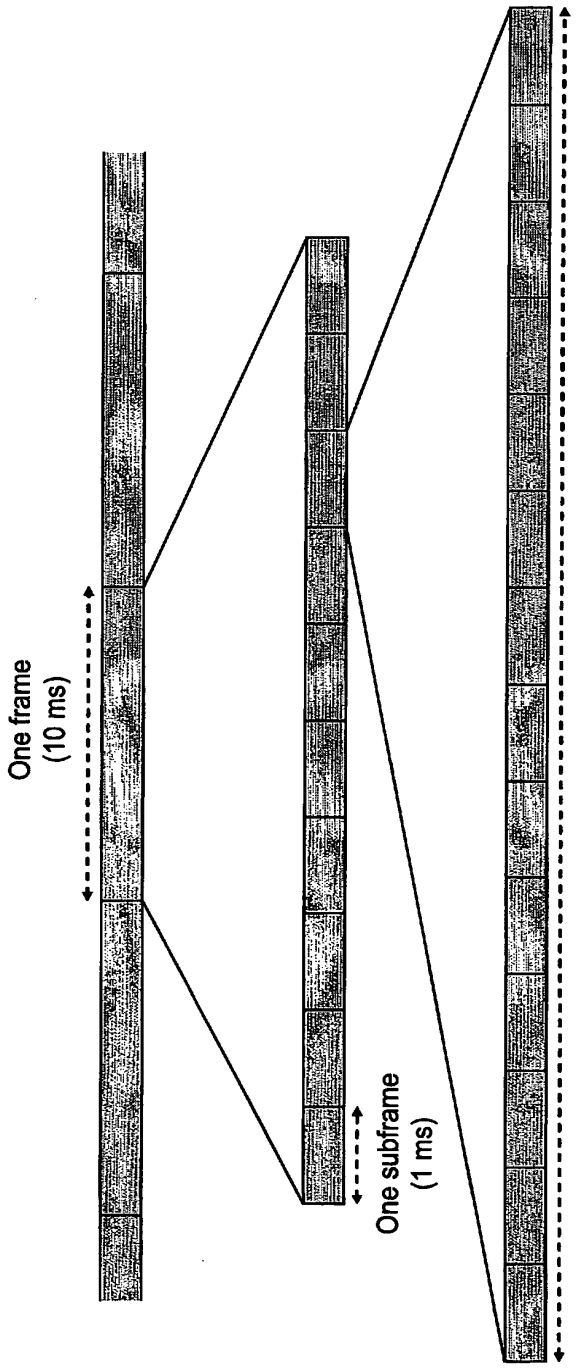

FIG. 1
(PRIOR ART)

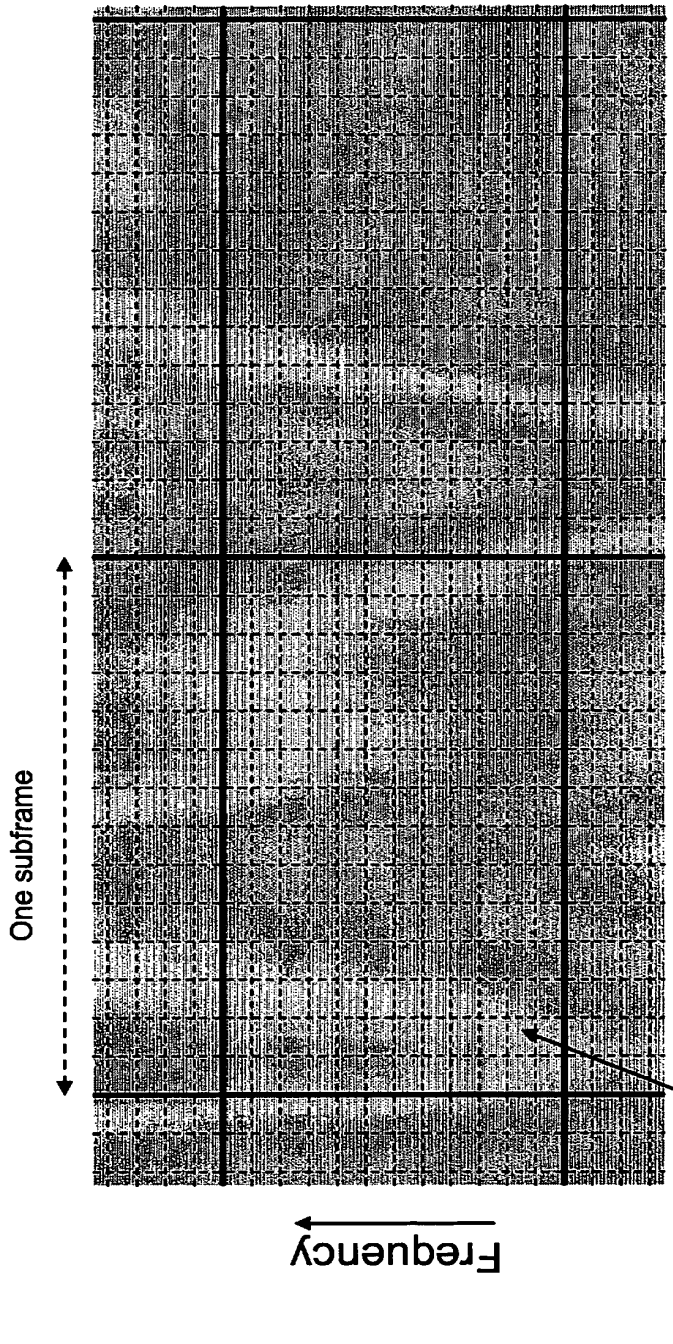

FIG. 2
(PRIOR ART)

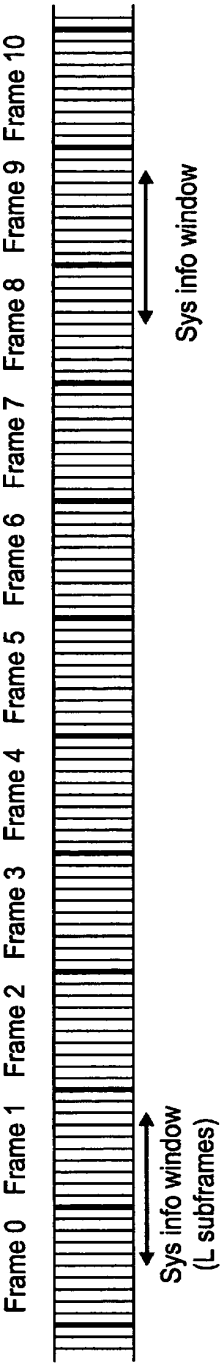

FIG. 3

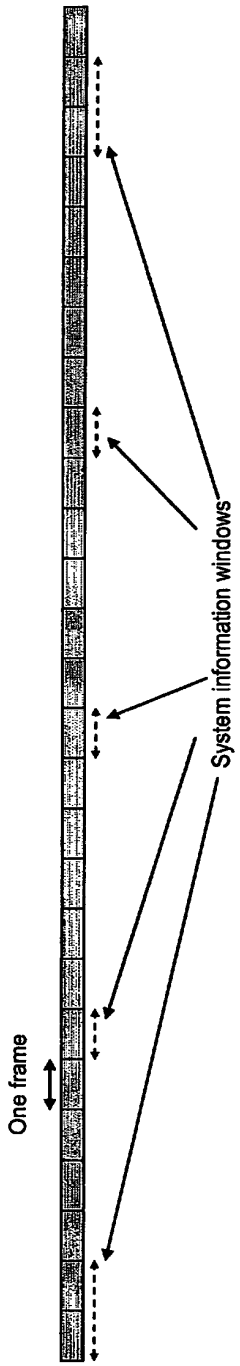

FIG. 4

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	**FOR FURTHER ACTION** See Form PCT/IPEA/416	
P24241WO1		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/SE2008/050407	10-04-2008	18-06-2007
International Patent Classification (IPC) or national classification and IPC		
See Supplemental Box		
Applicant		
TELEFONAKTIEBOLAGET LM ERICSSON (PUBL) et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 8 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:

   a. ☐ *(sent to the applicant and to the International Bureau)* a total of _____ sheets, as follows:

      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s))

      _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☒	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
16-04-2009	22-09-2009
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer Anders Ackeberg / EÖ Telephone No. +46 8 782 25 00

Form PCT/IPEA/409 (cover sheet) (January 2009)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/SE2008/050407

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of: Cover sheet

International patent classification (IPC)
H04J 3/00 (2006.01)
H04B 7/26 (2006.01)
H04W 68/00 (2009.01)
H04W 74/04 (2009.01)

Form PCT/IPEA/409 (Supplemental Box) (January 2009)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/SE2008/050407

Box No. I Basis of the report

1. With regard to the **language**, this report is based on:
   - ☒ the international application in the language in which it was filed.
   - ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of:
     - ☐ international search (Rules 12.3(a) and 23.1(b)).
     - ☐ publication of the international application (Rule 12.4(a)).
     - ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a)).

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*
   - ☒ the international application as originally filed/furnished.
   - ☐ the description:
     - pages _____ as originally filed/furnished.
     - pages* _____ received by this Authority on _____
     - pages* _____ received by this Authority on _____
   - ☐ the claims:
     - pages _____ as originally filed/furnished.
     - pages* _____ as amended (together with any statement) under Article 19
     - pages* _____ received by this Authority on _____
     - pages* _____ received by this Authority on _____
   - ☐ the drawings:
     - pages _____ as originally filed/furnished.
     - pages* _____ received by this Authority on _____
     - pages* _____ received by this Authority on _____
   - ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:
   - ☐ the description, pages _____
   - ☐ the claims, Nos. _____
   - ☐ the drawings, sheets/figs _____
   - ☐ the sequence listing *(specify)*: _____
   - ☐ any table(s) related to the sequence listing *(specify)*: _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   - ☐ the description, pages _____
   - ☐ the claims, Nos. _____
   - ☐ the drawings, sheets/figs _____
   - ☐ the sequence listing *(specify)*: _____
   - ☐ any table(s) related to the sequence listing *(specify)*: _____

5. ☐ This report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 70.2(e)).

6. ☐ Supplementary international search report(s) from Authority(ies) _____ have been received and taken into account in drawing up this report (Rule 45*bis*.8(b) and (c)).

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

Form PCT/IPEA/409 (Box No. I) (January 2009)

Box No. V **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-25	YES
	Claims	----	NO
Inventive step (IS)	Claims	1-11, 13-25	YES
	Claims	12	NO
Industrial applicability (IA)	Claims	1-25	YES
	Claims	----	NO

2. Citations and explanations (Rule 70.7)

The claimed invention

The claimed invention concerns a method for transmitting system information.
In LTE, system information can be divided in two parts, a fixed part sent on BCH and a dynamic part sent on the DL-SCH. Different portions of the dynamic part of the system information need to be repeated more or less often.

The claimed invention solves this problem by transmitting control information in recurring time windows and indicating to the receiving UE which subframes that are dynamically selected to carry control information.

Cited documents:

D1: "Draft text proposal capturing agreements on system Information"
R2-072205
3GPP TSG-RAN2 Meeting #58
Kobe, Japan, 7th-11th May 2007

D2: "System information scheduling and change notification"
R2-071912
3GPP TSG-RAN2 Meeting #58
Kobe, Japan, 7th-11th May 2007

D3: 3GPP TS36.300 V8.0.0 (2007-03)

D4: WO 2007052917 A1
D5: EP 1799003 A1

.../...

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of: Box V

D1, which is considered to represent the most relevant prior art, describes transmission of system information in LTE. See the whole document.

D2, which is also considered to be a relevant document, describes system information scheduling. See the whole document.

D3, which is a background art document, is the 3Gpp specification for E-UTRA and E-UTRAN, overall description. See pages 36 and 72-74.

D4 is a background art document. According to D4, in the related art, it can be said that the system information is always fixed or non- flexible. Such fixed format allows a mobile terminal to easily detect and properly read the system information transmitted from the network. In contrast, the features of the invention in D4 allow at least some portions of the system information to be dynamically (or flexibly) changed. Appropriate indicators are included such that a mobile terminal can properly detect and read the dynamic (flexible) system information. See abstract, sections [3]-[4], [15], [32]-[34] and [44]-[59] and figures 2-3 and 7-8.

D5, which is a background art document, describes mapping of broadcast system information to a shared transport channel. See abstract, sections [0025]-[0026] and [0032]-[0048] and figures 6 and 10-12.

Claim 12

In D1, a group of system information blocks (SIBs) that have the same scheduling requirements are referred to as a Scheduling Unit (SU). The most frequently repeated SU (SU-1) carries scheduling information of the other SUs and indication in which the SU the SIB is included. An SU may furthermore be segmented, in which case segments are scheduled in subsequent consecutive subframes.

To indicate in which the SU the SIB is included is considered to be comparable to indicate which subframes that carries system information.

.../...

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of: Box V

Hence, the claimed invention differs from D1 in that each subframe includes an indicator to indicate which subframe that carries system information. However, to include an indicator in each subframe, instead of an indicator in SU-1 that indicates which subframes that carries system information, is not considered to go beyond what can be expected from a person skilled in the art. Consequently, claim 12 is considered to fail to involve an inventive step.

Claims 1-11 and 13-25

The invention defined in claims 1-11 and 13-25 is not disclosed by any of these documents.
The cited prior art does not give any indication that would lead a person skilled in the art to the claimed invention of transmitting the system information in recurring time windows, each said time window spanning a
number of signal subframes, and dynamically selecting which sub-frames within a given time window are to be used and including an indicator in each of the selected sub-frames to indicate to receiving User Equipment that the sub-frame carries system information. Therefore, the claimed invention is not obvious to a person skilled in the art.

Accordingly, the invention defined in claims 1-11 and 13-25 is novel and is considered to involve an inventive step. The invention is industrially applicable.

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claims 1, 10, 12, 15 and 21 are not supported by the description as required by Article 6 PCT, as their scope is broader than justified by the description and drawings. The technical feature "downlink shared channel", included in claim 12, is missing in claims 1, 10, 15 and 21. Furthermore, the feature "dynamically selecting which subframes to be used for carrying the system information", included in claims 1 and 10, is missing in claim 12.
Since independent claims 1, 10, 12, 15 and 21 do not contain the same technical features, they do not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.

Furthermore, claims 1, 10, 15 and 21 do not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. In claims 1 and 10 the expression "recurring time windows overlaid on a sequence of transmit channel subframes" is used. However, in claims 15 and 21 it is stated "recurring time window **used for transmission of system information**". Since different wordings are used, it is unclear if the matter for which protection is sought is equal for claims 1 and 10 as for claims 15 and 21.

The applicant has stated that the feature "downlink shared channel", included in claim 12, not is a technical feature essential to the definition of the invention, since it follows that "in LTE, the **fixed part** of the system information is transmitted using the BCH (broadcast control channel) transport channel" (see page 2). What should also be noted is found on page 2, lines 12-14, where it is stated "**The dynamic part** of the system information is assumed to be transmitted using the DL-SCH, or at least DL-SCH-like transport channel, similar to normal data transmission as described above". The applicant thus claims that transmitting system information on the DL-SCH is merely an alternative.

However, from the description it is obvious that the mentioned system information that is transmitted is **the dynamic part** of the system information (see page 2: lines 20-25 and 31).

.../...

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of: Box VIII

The claimed invention is said to solve the problem that different portions of **the dynamic part** of the system information are more or less time critical, and thus need to be repeated more or less often. Furthermore, line 31 on page 2 states that "The invention described below allows for transmission of **the dynamic part** of the system information fulfilling these requirements and desirable properties while, at the same time, allowing for low UE complexity.

Hence, since the dynamic part is transmitted using the DL-SCH, the technical feature "downlink shared channel", missing in claims 1, 10, 15 and 21, is considered to be a technical features essential to the definition of the invention.

Furthermore, the applicant has referred to page 5, lines 24-26, in order to show the support in the description for claims 1 and 10. In the same section on that page (on lines 22-24) it is stated that "for latency reasons there may in some situations, be a benefit to not having too many consecutive subframes used for transmission of system information, thus making them unavailable for downlink user data transmission", i.e. the system information and downlink user data **shares** the same resources. This clearly shows that the system information, in claims 1 and 10, is sent on the DL-SCH.

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VIII-3-1	**Declaration: Entitlement to claim priority** Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application specified below, where the applicant is not the applicant who filed the earlier application or where the applicant's name has changed since the filing of the earlier application (Rules 4.17(iii) and 51bis.1(a)(iii)) Name	in relation to this international application TELEFONAKTIEBOLAGET LM ERICSSON (PUBL) is entitled to claim priority of earlier application No. 60/944,628 by virtue of the following:
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Box No. VIII (iv) DECLARATION: INVENTORSHIP (only for the purposes of the designation of the United States of America)

The declaration must conform to the following standardized wording provided for in Section 214; see Notes to Boxes Nos. VIII, VIII (i) to (v) (in general) and the specific Notes to Box No. VIII (iv). If this Box is not used, this sheet should not be included in the request.

Declaration of inventorship (Rules 4.17(iv) and 51*bis*.1(a)(iv)) for the purposes of the designation of the United States of America:

I hereby declare that I believe I am the original, first and sole (if only one inventor is listed below) or joint (if more than one inventor is listed below) inventor of the subject matter which is claimed and for which a patent is sought.

This declaration is directed to the international application of which it forms a part (if filing declaration with application).

This declaration is directed to international application No. PCT/ SE2008/050407 (if furnishing declaration pursuant to Rule 26*ter*).

I hereby declare that my residence, mailing address, and citizenship are as stated next to my name.

I hereby state that I have reviewed and understand the contents of the above-identified international application, including the claims of said application. I have identified in the request of said application, in compliance with PCT Rule 4.10, any claim to foreign priority, and I have identified below, under the heading "Prior Applications," by application number, country or Member of the World Trade Organization, day, month and year of filing, any application for a patent or inventor's certificate filed in a country other than the United States of America, including any PCT international application designating at least one country other than the United States of America, having a filing date before that of the application on which foreign priority is claimed.

Prior Applications: US 60/944,628

I hereby acknowledge the duty to disclose information that is known by me to be material to patentability as defined by 37 C.F.R. § 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the PCT international filing date of the continuation-in-part application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name: DAHLMAN, Erik

Residence: Tackjärnsvägen 12 ,168 68 BROMMA ,Sweden
(city and either US state, if applicable, or country)

Mailing Address:

Citizenship: Sweden

Inventor's Signature: Date: 2008-07-13
(The signature must be that of the inventor, not that of the agent)

Name: VUKAJLOVIC, Vera

Residence: Frejgatan 45 ,113 49 STOCKHOLM ,Sweden
(city and either US state, if applicable, or country)

Mailing Address:

Citizenship: Sweden

Inventor's Signature: Date: 20 May 08
(The signature must be that of the inventor, not that of the agent)

☐ This declaration is continued on the following sheet, "Continuation of Box No. VIII (iv)".

VIII-2-1	**Declaration: Entitlement to apply for and be granted a patent** Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent (Rules 4.17(ii) and 51bis.1(a)(ii)), in a case where the declaration under Rule 4.17(iv) is not appropriate: Name (LAST, First)	in relation to this international application TELEFONAKTIEBOLAGET LM ERICSSON (PUBL) is entitled to apply for and be granted a patent by virtue of the following:
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PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
12/664,347	12/11/2009	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☐ RATE ($)	SMALL ENTITY ☐ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	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).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
	12/11/2009									
	Total (37 CFR 1.16(i))	* 25	Minus	** 25	= 0	X $ =		OR	X $52=	0
	Independent (37 CFR 1.16(h))	* 4	Minus	***4	= 0	X $ =		OR	X $220=	0
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L 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.

Legal Instrument Examiner:
/ANDREA BURDEN/